PB90-138330

Superfund Record of Decision (EPA Region 9): Atlas Asbestos Mine Fresno County, California (First Remedial Action), July 1989

(U.S.) Environmental Protection Agency, Washington, DC

19 Jul 89

U.S. Department of Commerce
National Technical Information Service
NTIS

PB90-138330

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R09-89/035
July 1989

EPA

Superfund Record of Decision:

Atlas Asbestos Mine, CA

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First Remedial Action

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16. Abstract (Limit: 200 words)

The Atlas Asbestos Mine site is in Fresno County, California, and is being remediated concurrently with the Coalinga Asbestos Mine site. This Record of Decision (ROD) does not address the mines, but rather a separate area in the city of Coalinga, where asbestos, from the Atlas-Coalinga mines, was deposited to await handling and shipment. This 107-acre site has been designated as the first operable unit for the Atlas Asbestos Mine and the Coalinga Asbestos Mine sites. From the 1960s to the mid-1970s extensive asbestos mining and milling took place in areas near the site, and until 1980 the site operated as an asbestos milling, manufacturing, storage, and transportation center. The site consists of four distinct areas: (1) the warehouse which was once a mining waste distribution center and which currently houses 1,600 cubic yards of mining waste; (2) a storage yard which contains asbestos-contaminated stacked pipes; (3) a shipping yard which was used as an asbestos distribution center by the Atlas Asbestos Company; and (4) the U.S. Asbestos Company which currently stores piles of asbestos-contaminated mining waste. In 1980 a State inspection revealed elevated levels of asbestos in the nearby aqueduct which suggested that the Atlas Asbestos Mine and Coalinga Asbestos Mine sites were probable asbestos sources. Subsequent sampling programs, conducted between 1983 and 1987, revealed that surface water and air also contained elevated levels of asbestos. As a result of these findings, EPA issued an Administrative Order (See Attached Sheet)

con't on PS ii

17. Document Analysis a. Descriptors

Record of Decision - Atlas Asbestos Mine, CA
First Remedial Action
Contaminated Media: soil, debris
Key Contaminants: metals (nickel), other inorganics (asbestos, mining wastes)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement

19. Security Class (This Report) None

20. Security Class (This Page) None

21. No. of Pages 120

22. Price A06

(See ANSI-Z39.18)

See Instructions on Reverse

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con't from pg 1

16. Abstract (continued)

to a major landowner, Southern Pacific Transportation Company (SPTC), requiring SPTC to conduct an additional remedial investigation and a feasibility study and to perform interim measures to stabilize the site. Because airborne emissions of asbestos pose the greatest threat to neighboring residents, this remedial response will limit the amount of asbestos and nickel released from the soil and emitted into the air. The primary contaminants of concern affecting the soil and debris are metals including nickel, and other inorganics including asbestos and mining wastes.

The selected remedial action for this site includes excavating and consolidating 14,500 cubic yards of asbestos, chromium, and nickel-contaminated soil and building debris; constructing an underground waste management unit (WMU) to contain and dispose of contaminated soil and waste onsite; capping the WMU area; regrading the excavated area; decontaminating debris; monitoring soil moisture content, ground water, air, and personnel;and implementing institutional controls. The estimated present worth cost for this action ranges between $1,500,000 to $2,500,000, which includes annual O&M costs of $35,000.

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8909E

CITY OF COALINGA OPERABLE UNIT OF THE ATLAS MINE AND JOHNS-MANVILLE COALINGA ASBESTOS MINE AND MILL NPL SITES

RECORD OF DECISION

United States Environmental Protection Agency
Region IX - San Francisco, California
July 19, 1989

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RECORD OF DECISION

DECLARATION

SITE NAME AND LOCATION

City of Coalinga Operable Unit
Fresno County, California

STATEMENT OF BASIS AND PURPOSE

This Record of Decision ("ROD") presents the selected remedial action for the City of Coalinga Operable Unit, in Fresno County, California. The remedy was selected pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act, 42 U.S.C. Section 9601 et. seq., ("CERCLA") and in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Section 300 et. seq., ("NCP"). This decision is based on the Administrative Record for this Operable Unit. The attached index identifies the items that comprise the Administrative Record.

The State of California has concurred in the selection of this remedy. See Administrative Record Doc. # 1066.

THE SITE

The response action selected in this ROD addresses actual or threatened releases of hazardous substances from the City of Coalinga Operable Unit that may present an imminent and substantial endangerment to public health, welfare, or the environment. During remedial investigations for the Atlas Mine Superfund Site and the Johns-Manville Coalinga Mill Superfund Site (the "Atlas-Coalinga Superfund Sites" or the "Mine and Mill Sites"), it was discovered that asbestos had been transported from the mines and mills to an area within the City of Coalinga for eventual handling and shipment. Soil sampling confirmed the presence of uncontrolled hot spots of asbestos and nickel contamination over the 107 acre area in Coalinga (the "Site"). An outline of the Site can be found at Figure 1A.

On August 24, 1987 the Environmental Protection Agency ("EPA") issued Order No. 87-04 to the Southern Pacific Transportation Company ("SPTC") pursuant to CERCLA Section 106. Order No. 87-04 required SPTC to take emergency containment actions at the Site to reduce the threat to public health from nickel and asbestos dust that could enter the air from contaminated soils. Pursuant

Areas at the Site, including warehouses, storage yards and shipping yards, contain asbestos-bearing soils, equipment and waste piles. Analysis of soil and waste pile samples using polarized light microscopy ("PLM") shows the asbestos levels ranging from one area percent (the detection limit) to as high as 98 area percent. Chromite ore waste and soil samples were also analyzed for heavy metals. These analyses indicated that the Soluble Threshold Limit Concentration ("STLC") for the heavy metal nickel, as specified in Title 22 of the California Administrative Code, was exceeded in some of the samples that tested positive for asbestos.

Asbestos and nickel are hazardous substances as defined in 42 U.S.C. § 9601(14) and as listed in 40 C.F.R. § 302.4. Asbestos is a known human carcinogen and has been shown to cause lung cancer and mesothelioma. Asbestos also causes other lung diseases, such as asbestosis. Nickel is a potential human carcinogen that can affect the lungs, nasal cavities, and skin. If asbestos and nickel remain uncontrolled at the Site, the potential for human exposure to asbestos and nickel and the resulting increased risk to human health, primarily through the inhalation pathway, will remain.

EPA is undertaking additional Remedial Investigations/Feasibility Studies ("RI/FS") to evaluate remedial action alternatives for the Mine and Mill Superfund Sites and will select remedies for those Sites in separate Record of Decision documents.

DESCRIPTION OF THE SELECTED REMEDY

The remedial action selected for the Site in this ROD is containment of the asbestos- and nickel-contaminated materials in an underground vault. This remedy entails:

1) The removal and consolidation of the asbestos- and nickel-contaminated soils at this Site that: (a) exceed one area percent asbestos using polarized light microscopy ("PLM"), (b) display the light-grey coloring characteristics of asbestos contaminated soils and/or (c) contain nickel at levels in excess of background. Areas displaying light-grey coloring will be remediated until no light grey color is visible and only light brown soil remains, by visible inspection; confirmation will be by 1 area percent PLM.

2) Removal and consolidation of waste materials and equipment that exceed the levels set forth in paragraph 1, immediately above.

3) Decontamination of buildings to less than or equal to one percent by PLM.

4) Construction of an underground, on-site Waste Management Unit to bury permanently the consolidated contaminated substances under an impermeable cap. The impermeable cap will consist of a compacted soil foundation layer overlain by an impermeable clay mat, covered by a second soil layer.

5) Use of strict dust control measures to limit the release of asbestos fibers from the Site during the Remedial Action work.

6) Confirmation sampling to ensure achievement of the clean-up standards.

7) Ground-water monitoring and continuous monitoring of soil moisture content using neutron probes.

8) Regrading of areas where contaminated soils have been removed.

9) Placement of deed restrictions on the Site property where the Waste Management Unit and soil cover exist, to prevent the disturbance of the cap and possible release of asbestos fibers or nickel contaminants.

The permanent burial of material contaminated with asbestos and nickel in the Waste Management Unit will minimize the release of asbestos and nickel, thus providing long-term protection of human health and the environment. The estimated cost of the selected remedial action is $2,500,000.

Operation and maintenance activities will be required to ensure the effectiveness of the response action. These activities include: (1) quarterly visual inspections to ensure the integrity of the cap for three years with annual visual inspections thereafter, and (2) any repair work necessary to maintain the integrity of the cap, including maintenance of vegetation, 3) ground water monitoring well(s), and 4) monitoring of soil moisture content using neutron probes. In the event of a natural event such as a flood or earthquake, all repairs necessary to contain the hazardous substances will be made. EPA will perform a review of the remedial action pursuant to CERCLA Section 121(c).

STATUTORY DETERMINATIONS

Pursuant to CERCLA Section 121, 42 U.S.C. § 9621, and in accordance with the NCP, the selected remedy for the City of Coalinga Operable Unit: (1) is protective of human health, welfare, and the environment; (2) meets the applicable and relevant and appropriate environmental requirements; and (3) is cost effective. The selected remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site. Treatment of the asbestos contamination in the City of Coalinga Operable Unit was determined to be impracticable based on effectiveness, technical feasibility, implementability and cost factors. The reasons for this determination are further elaborated herein, and a thorough discussion of these factors may be found in the Operable Unit Feasibility Study for this Site. While treatment to reduce permanently and significantly the mobility, toxicity and volume was found to be impracticable, the remedy is designed to protect the public and environment on a permanent basis through continued monitoring and, if necessary, maintenance.

This remedy will result in hazardous substances remaining on Site above health-based levels. Pursuant to CERCLA Section 121, 42 U.S.C. Section 9621, EPA will conduct a review at five year intervals, beginning after commencement of remedial action, to ensure that the remedy continues to provide adequate protection of human health and the environment.

Harry Seraydarian

for Daniel W. McGovern
Regional Administrator
EPA Region IX

7/19/89
Date

RECORD OF DECISION

DECISION SUMMARY

1.0 SITE LOCATION AND DESCRIPTION

The City of Coalinga is located in Pleasant Valley near the confluence of two intermittent streams, Warthan Creek and Los Gatos Creek, which are part of the Arroyo Pasajero Drainage Basin. The Arroyo Pasajero watershed and adjacent Cantua Creek watershed are located on the western margin of the central San Joaquin Valley in an area that includes the foothills of the Southern Diablo Range Mountains to the west and a system of coalescing alluvial fans (including the Arroyo Pasajero fan and Cantua fan) to the east. Approximately 20 miles northwest of Coalinga, in the Diablo Range, is the New Idria Formation. This elliptically shaped rock formation covers approximately 48 square miles and is the largest known serpentine deposit in the Coalinga region. The southeastern third of the New Idria Serpentine Mass (or New Idria Formation) has been the locus of significant mining and surface mineral exploration. These activities have included successful exploration and mining for chromite ore and chrysotile asbestos ore as well as for other serpentine related minerals. Cattle ranching and oil exploration and production are the other main natural resource activities in the Coalinga area.

In September, 1984, an asbestos mine located in the New Idria Formation and a mill located immediately southeast of the Formation were listed on the Superfund National Priorities List as the Atlas Mine and Superfund Site and the Johns-Manville Coalinga Asbestos Mill Superfund Site (the "Atlas-Coalinga Sites" or the "Mine and Mill Sites"), respectively. During investigation of these Mine and Mill Sites, it was discovered that asbestos had been transported from the mines and mills to an area within the City of Coalinga for eventual handling and shipment. Soil sampling confirmed the presence of uncontrolled hot spots of asbestos and nickel contamination over a 107 acre area (the "Site") in the City of Coalinga, California.

The Site is located in a mixed use, industrial and residential area. The Site boundary extends approximately one mile from Fourth Street on the northern end of Coalinga to its southern border, near the intersection of Lucille Avenue and Highway 198. The east-west borders are between Glenn and Forest Streets in the northern section, fanning out to Highway 198 for the western border and approximately 900 feet in an easterly direction for the eastern border. Figure 1A is an outline of the Site boundaries; Figure 1B shows the location of the Site in relation to the Mine and Mill Sites.

The contaminated areas at the Site connected to the Atlas Mine Site are at the northern end of the Site, while the contaminated areas connected to the Johns-Manville Mill Site are at the

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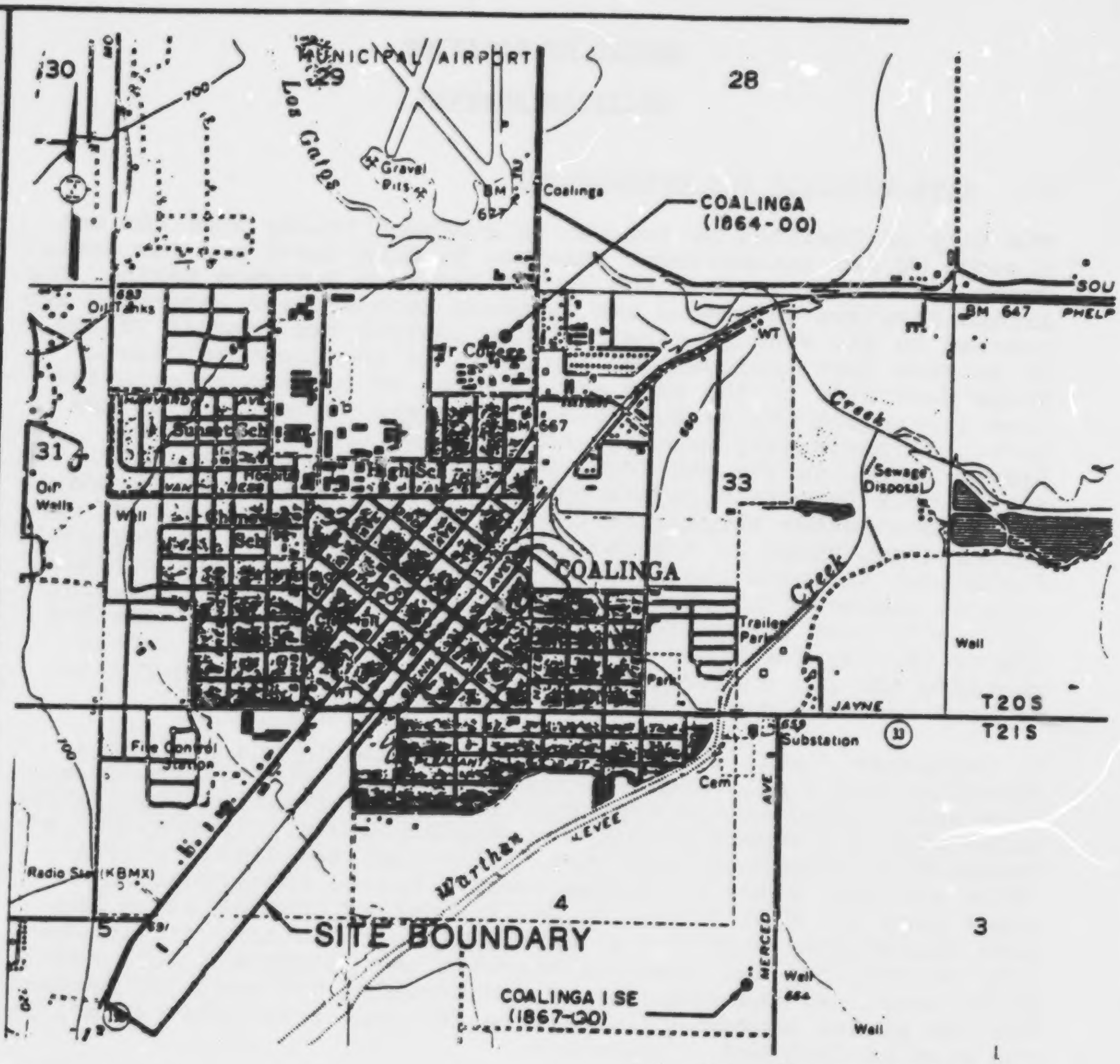


MUNICIPAL AIRPORT
30
29
28
Los Gatos
Gravel Pits
BM 627
Coalinga
COALINGA (1864-00)
Oil Tanks
Jr College
BM 667
Sunset Sch
High Sch
31
Oil Wells
Well
33
Sewage Disposal
Creek
COALINGA
Trailer Park
Park
Well
JAYNE
T20S
T21S
Substation
33
Fire Control Station
Cem
LEVEE
Warthan
Radio Sta (KBMX)
4
3
5
SITE BOUNDARY
MERCED AVE
COALINGA 1 SE (1867-00)
Well
Well
SOU
PHELP
BM 647
WT
700

EXPLANATION:

● (1867-00) STATION NAME (DWR STATION NUMBER)

SCALE

0 2000 4000 FEET

CONTOUR INTERVAL = 20 FEET

FIGURE 1A

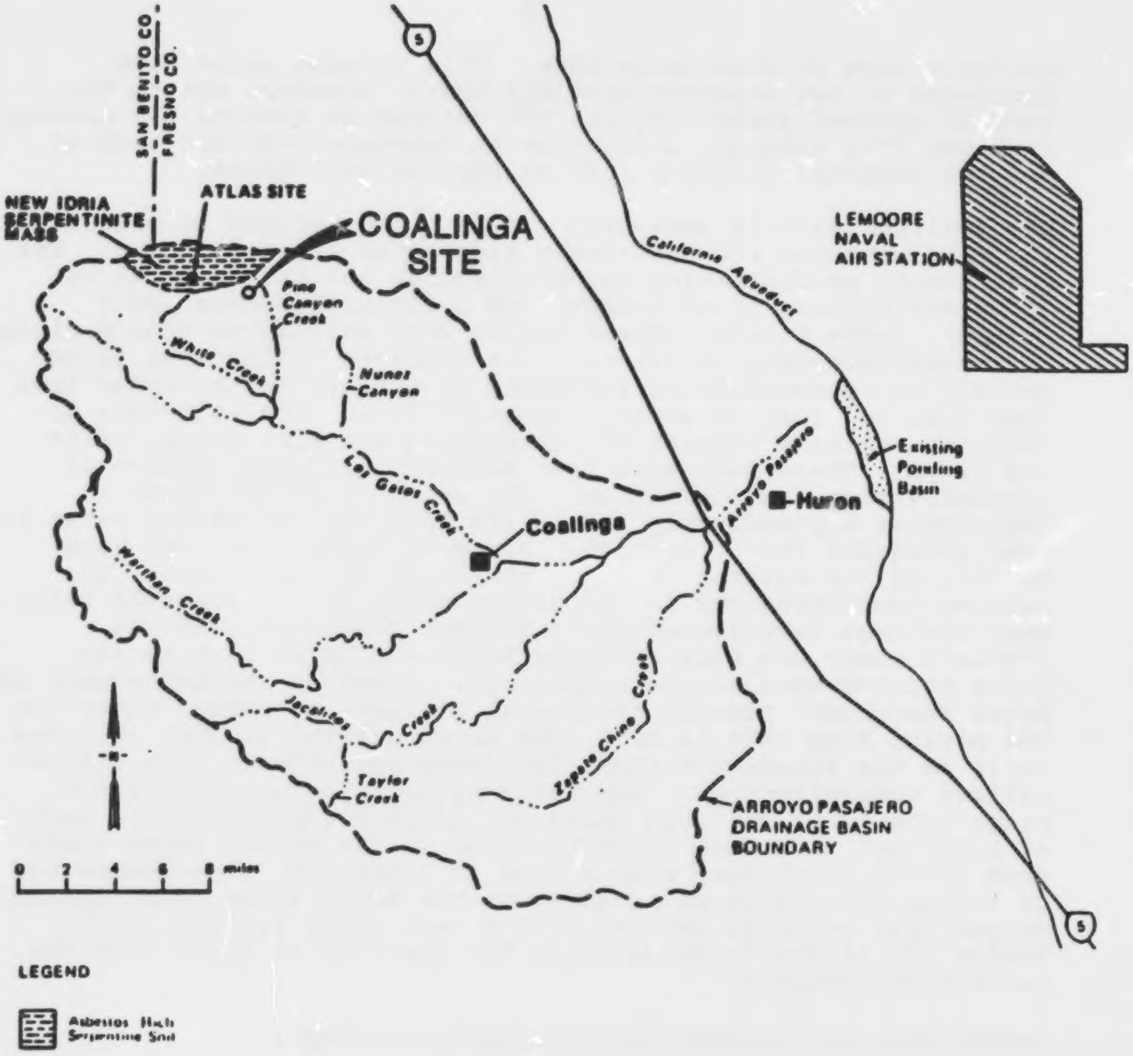
SITE LOCATION

COALINGA SITE

REFERENCE:

USGS 7.5 MINUTE TOPOGRAPHIC
MAP OF COALINGA, CALIFORNIA
QUADRANGLE, DATED 1956
PHOTOREVISED 1979
SCALE: 1:24000

"Do Not Scale This Drawing


SAN BENITO CO.
FRESNO CO.
5
NEW IDRIA SERPENTINITE MASS
ATLAS SITE
COALINGA SITE
Pine Canyon Creek
White Creek
Nunez Canyon
Los Gatos Creek
Coalinga
Warthen Creek
Jacalitos Creek
Taylor Creek
Zapato Chino Creek
Arroyo Pasajero
Huron
California Aqueduct
LEMOORE NAVAL AIR STATION
Existing Ponding Basin
ARROYO PASAJERO DRAINAGE BASIN BOUNDARY
N
0 2 4 6 8 miles
LEGEND
Asbestos Rich Serpentine Soil

REFERENCE:

DRAWING BY
WOODWARD-CLYDE CONSULTANTS

FIGURE 1B

COALINGA SITE

PROJECT NAME

SITE LOCATION
IN RELATION TO MINE SITES

southern edge of this large Site. This cleanup could have proceeded as two separate Operable Units; however, due to the need to proceed expeditiously, EPA decided to combine the cleanup into one Site cleanup, designated an Operable Unit for each of the two National Priority List Mining and Mill Sites.

The Coalinga area is semi-arid and is characterized by moderately low precipitation and relatively high rates of evaporation. The mean annual precipitation and evaporation are estimated to be 189.6 millimeters (7.46 inches) and 2,253 millimeters (88.7 inches), respectively. (These values were calculated from periods of record exceeding 15 years). The Pleasant Valley area is underlain by unconsolidated sediments that range in thickness from less than 100 feet to several thousand feet. The sediments underlying the Site consist of interbedded gravels, sands, silts and clays. These sediments have markedly different hydraulic conductivities and porosities. The depth to ground water in Coalinga is approximately 100 to 150 feet and the ground water is used primarily for irrigation. Since at least 1951, the water quality of the aquifer in Pleasant Valley has been poor. The sulfate concentrations in the ground water in all reported wells near Coalinga have exceeded the Maximum Contaminant Levels ("MCLs") under the Safe Drinking Water Act by as much as six times the recommended concentrations. Based on the Department of Water Resources' records of mineral analyses of ground water for the period from 1978 to 1985, the water quality of four selected wells in the Pleasant Valley area shows moderate to high sodium-sulfate concentrations. The total major anion concentrations range from 1,100 to 2,600 parts per million ("ppm") with a mean of 1,700 ppm. Sulfate concentrations in the ground water range from 660 to 1,900 ppm, with a mean of 1,300 ppm. The percentage of sodium concentration relative to the major anion concentration ranges from 45 to 53 percent with a mean of 49 percent. Virtually all of the drinking water for Coalinga is drawn from the California Aqueduct.

Description of Contaminated Structures and Areas

The Site has been divided into the following four areas, based on existing structures and geography (see figure 3):

1) The Marmac Warehouse: The warehouse is located on Elm Avenue (Highway 198) in the southwest section of Coalinga. This area was a chromite ore distribution center and currently houses approximately 1,600 cubic yards of chromite ore waste and other materials contaminated with asbestos.

2) The Storage Yard: This yard is located approximately one mile south of the Marmac Warehouse on Elm Avenue on the east side of the road. The storage yard contains stacked pipes that are contaminated with asbestos.

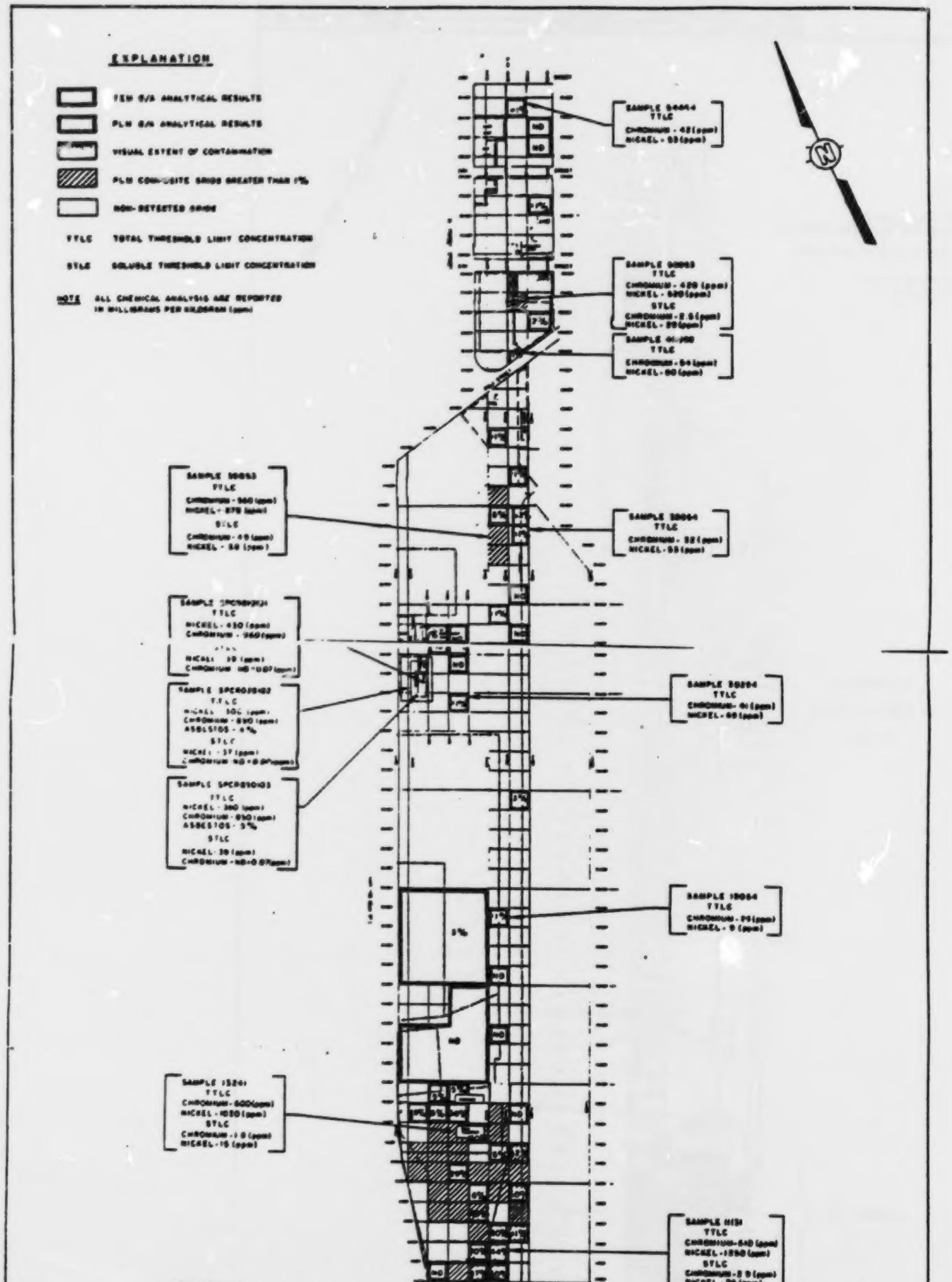

EXPLANATION
TEM O/A ANALYTICAL RESULTS
PLM O/A ANALYTICAL RESULTS
VISUAL EXTENT OF CONTAMINATION
PLM COMPOSITE GRIDS GREATER THAN 1%
NON-DETECTED GRIDS
TTLC TOTAL THRESHOLD LIMIT CONCENTRATION
STLC SOLUBLE THRESHOLD LIMIT CONCENTRATION
NOTE ALL CHEMICAL ANALYSIS ARE REPORTED IN MILLIGRAMS PER KILOGRAM (ppm)
SAMPLE 54054
TTLC
CHROMIUM - 42 (ppm)
NICKEL - 53 (ppm)
SAMPLE 50053
TTLC
CHROMIUM - 420 (ppm)
NICKEL - 520 (ppm)
STLC
CHROMIUM - 2.5 (ppm)
NICKEL - 29 (ppm)
SAMPLE 41/00
TTLC
CHROMIUM - 54 (ppm)
NICKEL - 80 (ppm)
SAMPLE 35053
TTLC
CHROMIUM - 360 (ppm)
NICKEL - 870 (ppm)
STLC
CHROMIUM - 4.0 (ppm)
NICKEL - 58 (ppm)
SAMPLE 33054
TTLC
CHROMIUM - 32 (ppm)
NICKEL - 53 (ppm)
SAMPLE SPCR020101
TTLC
NICKEL - 430 (ppm)
CHROMIUM - 360 (ppm)
STLC
NICKEL 39 (ppm)
CHROMIUM ND <0.07 (ppm)
SAMPLE SPCR020102
TTLC
NICKEL 300 (ppm)
CHROMIUM - 690 (ppm)
ASBESTOS - 4%
STLC
NICKEL - 37 (ppm)
CHROMIUM ND <0.07 (ppm)
SAMPLE SPCR030103
TTLC
NICKEL - 390 (ppm)
CHROMIUM - 690 (ppm)
ASBESTOS - 3%
STLC
NICKEL - 39 (ppm)
CHROMIUM - ND <0.07 (ppm)
SAMPLE 30204
TTLC
CHROMIUM - 41 (ppm)
NICKEL - 40 (ppm)
SAMPLE 19054
TTLC
CHROMIUM - 21 (ppm)
NICKEL - 9 (ppm)
SAMPLE 13241
TTLC
CHROMIUM - 600 (ppm)
NICKEL - 1030 (ppm)
STLC
CHROMIUM - 1.0 (ppm)
NICKEL - 15 (ppm)
SAMPLE 11151
TTLC
CHROMIUM - 640 (ppm)
NICKEL - 1380 (ppm)
STLC
CHROMIUM - 2.0 (ppm)
NICKEL - 36 (ppm)
N
ND
1%
3%

FIGURE 2

	SITE PLAN WITH SUMMARY OF CONTAMINATED AREAS IT CORPORATION COALINGA SITE	REV. 1 2-2-90	

REV. 1
2-07-89

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	11-2-88	APPROVED BY			

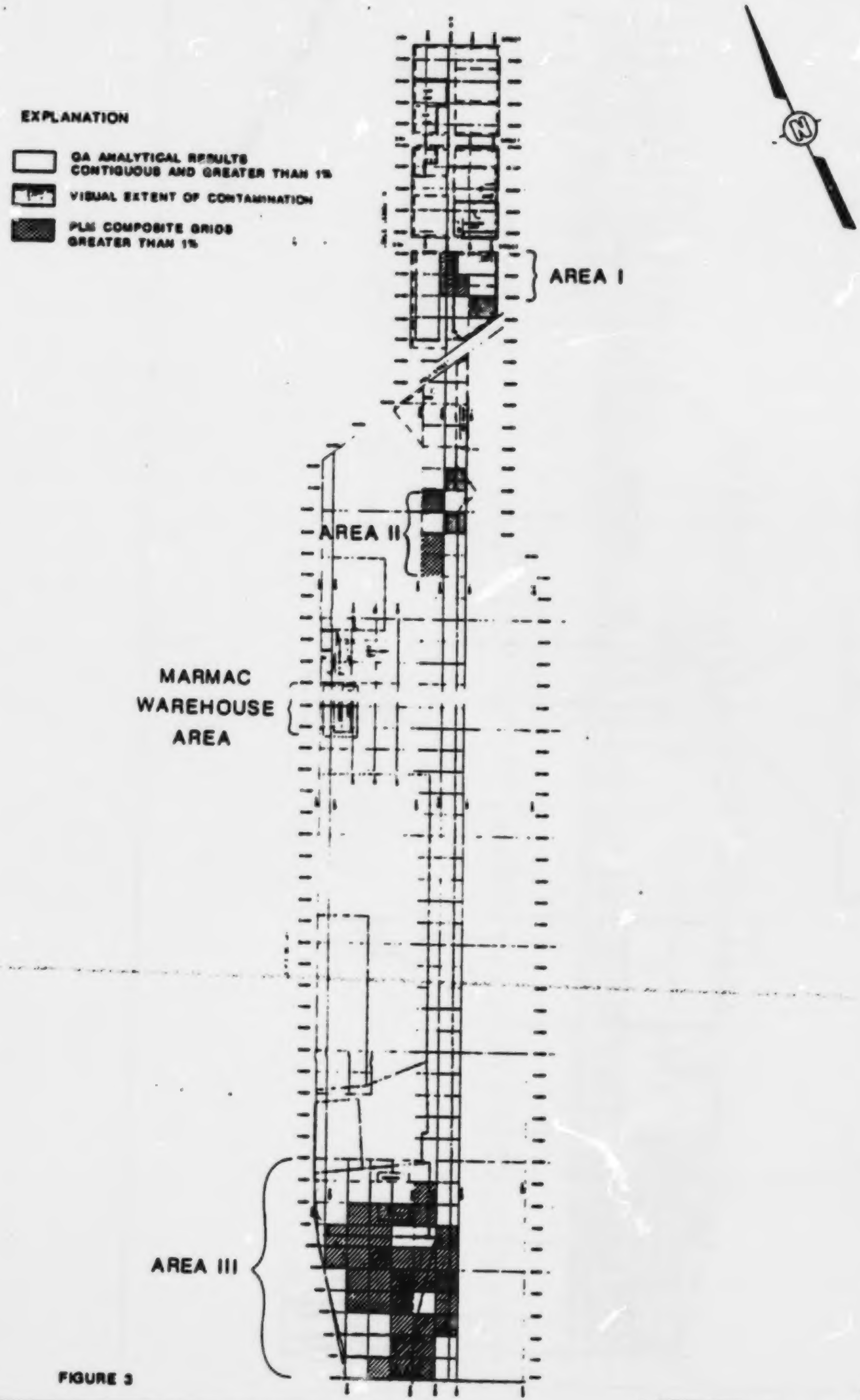
EXPLANATION
QA ANALYTICAL RESULTS CONTIGUOUS AND GREATER THAN 1%
VISUAL EXTENT OF CONTAMINATION
PLM COMPOSITE GRIDS GREATER THAN 1%
N
AREA I
AREA II
MARMAC WAREHOUSE AREA
AREA III

FIGURE 3

SUMMARY OF CONTAMINATED AREAS TO BE REMEDIATED
IT CORPORATION
COALINGA SITE

3) The Atlas Shipping Yard: This yard is located in the vicinity of Glenn Avenue and 6th Street. It was used as an asbestos distribution center by the Atlas Asbestos Company.

4) The U.S. Asbestos Company: This area is located at the southern border of the Site and encompasses approximately nine acres. Piles of raw asbestos ore are located in this area.

Because of the close proximity of residential areas to the piles of asbestos-containing material, it is important that the remediation proceed as soon as possible.

2.0 SITE HISTORY

In the mid-1950's, an investigation by the California Division of Mines and Geology indicated that the serpentine matrix of the New Idria formation was chrysotile asbestos. Subsequent investigation in the southeastern third of the New Idria Formation demonstrated that the asbestos ore could be mined and milled to produce a marketable short-fiber asbestos product. From 1959 through 1962, the Coalinga and Los Gatos Creek areas experienced an intensive land rush for asbestos mining claims. From the 1960's through the mid-1970's, extensive asbestos mining and milling operations were conducted in the Coalinga and Los Gatos Creek areas. From 1955 to 1980, the Site was the locus of milling, manufacturing, storage and transportation of asbestos-mining materials from the Mine and Mill Sites.

Discovery of the Problem in Coalinga

In early 1980, the Metropolitan Water District ("MWD") of Southern California detected elevated levels of asbestos in water samples from the California Aqueduct. An extensive sampling program along the Aqueduct, conducted by the MWD in August through September of 1980, suggested that the Atlas Mine and the Johns-Manville Mill Sites were probable sources of asbestos in the California Aqueduct. Asbestos levels of up to 2500 million fibers per liter ("MFL") were measured.

On October 17, 1980, the Central Valley Regional Water Quality Control Board ("CVRWQCB") and the California Department of Health Services ("DHS") inspected the Atlas Mine and the Johns-Manville Mill to determine if waste discharges from these facilities were in compliance with state regulations. The CVRWQCB concluded that additional corrective measures should be taken to prevent mine- and mill-generated asbestos from entering the drainage basins.

In March of 1983, the CVRWQCB collected four surface water samples during a period of high run-off in the Arroyo Pasajero watershed. Asbestos fiber concentrations in these samples ranged from 80,000 to 240,000 MFL. On June 14, 1983 the risks represented by the Atlas Mine and the Johns-Manville Coalinga Asbestos Mill were rated using the Hazard Ranking System. The Mining and

Mill Sites were approved for listing on the National Priorities List in September, 1984. Remedial Investigation/Feasibility Studies ("RI/FSs") are ongoing at both of these Sites.

During an airborne asbestos sampling program in 1986 and 1987 conducted as part of the Remedial Investigation and designed to measure airborne emissions from the Mining and Mill Sites, high asbestos readings were measured in the City of Coalinga. Based on this data, a study was initiated to look for possible sources of asbestos in Coalinga. On June 17 and 18, 1987, EPA conducted a limited sampling and analytical program in Coalinga. This study showed chrysotile asbestos occurrence from less than one (1) percent to fifty (50) percent in the area of the Site. Further investigation revealed that a major landowner in the contaminated area was Southern Pacific Transportation Company ("SPTC"). In August of 1987, EPA issued an administrative order pursuant to CERCLA Section 106 (Order No. 87-04) to SPTC, requiring SPTC to conduct a Remedial Investigation at the Site (i.e., an intensive sampling program to identify and quantify sources of mining waste contamination). As a result of the Remedial Investigation, areas contaminated with residual asbestos ore waste have been found throughout the Site. SPTC was also ordered to prepare an Operable Unite Feasibility Study ("OUFS") to develop and evaluate remedial alternatives for the Site. EPA released the OUFS and information concerning EPA's proposed plan for cleanup of the Site on February 9, 1989.

In response to Order No. 87-04, SPTC also performed interim measures to stabilize the waste materials during the more detailed investigation. These tasks included: i) limiting access to contaminated areas with fencing, ii) posting warning signs, iii) spraying biodegradable sealant to control dust emissions, and iv) covering waste ore piles with plastic sheeting. These interim measures were performed in the fall of 1987; a second spraying of sealant took place in the spring of 1988 and a third spraying took place in June of 1989.

3.0 ENFORCEMENT

In the spring of 1988, general notice letters were sent to several Potentially Responsible Parties ("PRPs"), notifying them of their potential liability for the cleanup of the Site. On February 22, 1989, EPA issued notices of negotiations to the PRPs for the City of Coalinga Operable Unit asking for good faith offers. Due to the significant risk to the public health and the environment posed by uncontained hazardous waste in Coalinga, and the immediacy of the threat, EPA determined pursuant to CERCLA Section 122 that clean-up should be completed as soon as possible, and that the discretionary special notice procedures in CERCLA Section 122 should not be invoked. Therefore, PRPs were given 21 days to respond to EPA's request for good faith offers. Negotiations to sign a consent decree are in progress. On May

10, 1989, a general notice letter was sent to the City of Coalinga notifying the municipality of its possible liability in this matter.

4.0 COMMUNITY RELATIONS

The public comment period for the OUFS and the proposed plan opened on February 9, 1989 and closed on March 24, 1989. A public meeting was held on February 22, 1989 at the Coalinga City Council Chambers and was attended by approximately sixty people. Prior to the beginning of the public comment period, EPA published a notice in the Fresno Bee and the Coalinga Weekly Courier. The notice briefly described the proposed plan and announced the public comment period and the public meeting. The notice also announced the availability of the proposed plan and the OUFS for review at the information repository established at the Coalinga Public Library.

A fact sheet describing the proposed plan was delivered to the information repository. Copies of the fact sheet were mailed to the EPA general mailing list for the Atlas Mine and Johns-Manville Coalinga Asbestos Mill Sites, which included approximately 300 members of the general public, elected officials and media representatives. Since June, 1987, EPA personnel have met periodically with members of the Coalinga City Council. Several different persons designated by the City Council to be the Council's contact with EPA have been kept informed about the investigation's status.

EPA has prepared the attached responsiveness summary, which provides responses to the comments submitted in writing during the public comment period, as well as responses to comments made by attendees at the February 22, 1989 public meeting.

5.0 SCOPE AND ROLE OF THE OPERABLE UNIT

The contamination at the Site represents the first operable unit of the Atlas Mine Site and of the Johns-Manville Coalinga Asbestos Mill Sites. The principal threat posed by uncontained asbestos close to residential areas comes from airborne emissions. The purpose of this response is to limit current and future airborne emissions from the asbestos- and nickel-contaminated soils.

The remedial action selected in this ROD addresses a problem specific to a populated area. Asbestos piles in Coalinga are to be removed, consolidated and permanently buried so that airborne emissions of asbestos fibers are minimized. The remediation strategy for this Site is necessarily different from the remediation strategy being considered for the Mine and Mill Sites. Those Sites contain large piles of asbestos ore tailings situated in sparsely populated areas and surrounded by very rich sources of naturally occurring chrysotile asbestos. These different situations require consideration of different factors. The RI/FS for the Atlas Mine Site and Phase 1 of the Johns-Manville

Coalinga Asbestos Mill Site (sampling and data collection) were initiated in July of 1985. The RI/FS for the work remaining on the RI as well as for the complete FS for the Johns-Manville Coalinga Asbestos Mill Site was initiated in November of 1986. The major goal of both RIs is to identify the sources, extent, pathways and receptors of the contaminants and to characterize the nature and extent of the public health and environmental problems presented by the contamination. Major components of the Remedial Investigation Reports include detailed soil, water and air sampling, geological and geotechnical studies and watershed modeling. The Feasibility Studies for these Sites, which will evaluate the necessity for and proposed extent of remedial action, are expected to be completed in the fall of 1989.

6.0 SITE CHARACTERISTICS

Elevated asbestos levels in the air in Coalinga were first discovered during the regional airborne asbestos sampling of 1986 and 1987. The detailed soil sampling performed by SPTC in the site area found levels of asbestos ranging from less than one area percent to as high as 98 area percent (found in raw asbestos ore piles). The composite soil samples were analyzed using Polarized Light Microscopy ("PLM") as described in Interim Method for the determination of Asbestos in Bulk Insulation Samples (EPA-600/M4-82-020). The less than one percent results are those in which the contaminant was present, but was below the level at which the concentration could be determined.

Figures 2 and 3 show the areas within the Site where asbestos contamination was detected. The total affected area is approximately 11 acres and the depth of contamination ranges from several inches to several feet. Asbestos ore waste was identified in a one half acre area adjacent to the Coalinga Machine Company. Samples from this asbestos ore waste ranged from two (2) area percent asbestos to 80 area percent using PLM. Approximately 500 feet south of Polk street is an area of approximately one and one half acres with recorded asbestos levels ranging from one area percent to 46 area percent. On the southern border of the Site is an area of approximately nine acres where piles of raw asbestos ore were identified. One sample from this area measured 98 area percent asbestos. The fenced area around the Marmac Warehouse contains broken pieces of asbestos-containing paneling. Several piles of suspected chromite ore waste are present within the warehouse. The suspected chromite ore waste in the Marmac Warehouse was sampled and analyzed for heavy metals and asbestos contamination. Three samples were analyzed for asbestos and the 17 metals listed in Title 22 of the California Administrative Code. The Title 22 Total Threshold Limit Concentration ("TTLC") for asbestos was exceeded in all samples; the Soluble Threshold Limit Concentration ("STLC") for nickel was exceeded in all samples. Additional samples from asbestos-contaminated areas throughout the Site were analyzed to see if a correlation existed between asbestos content and elevated levels of nickel. These analyses indicate that at any one measuring point within the vadose zone beneath the WMU, the following response will be initiated:

1. The RWQCB will be notified of test results and the elevated area will be retested.

2. After consulting with the RWQCB, a decision will be made as to whether this is an anomalous reading or if a real increase in moisture content has been detected. In the event that the detected increase is real, the following steps will be taken:

    (a) A qualitative assessment of the monitored area will be performed to determine the areal and vertical extent of migration. This assessment will consist of a detailed review of all data collected from the vadose zone monitoring network, background data established at the beginning of monitoring, and a review of the geotechnical and geochemical characteristics of the suspected soils.

    (b) A drilling and soil sampling program will be designed to collect soil samples from the affected areas and laboratory analyses will be performed.

    (c) Laboratory analyses will be performed on archived materials from the same location as the elevated moisture readings.

    (d) Results of the laboratory analyses will be compared for indications of contamination.

    (e) Should the continued neutron probe monitoring still indicate elevated moisture contents, a soil-pore liquid sampler will be installed. In addition, soil-pore liquid samplers will be installed away from the suspect area to provide background data, if the background soils contain sufficient moisture.

3. Upon installation of a soil-pore liquid sampler, samples will be collected for analyses on a quarterly basis and compared to background samples for indications of contamination.

4. If the RWQCB determines that the results of pore fluid sampling indicate contaminant migration which might

endanger groundwater, a monitoring plan, consisting of one upgradient and two downgradient wells, will be submitted to the RWQCB within 90 days.

Comments and Recommendations:

Upon review of the report, I have no objections to SPTC proceeding with the proposed project provided the following items are addressed.

1. Upon completion of the WMU, a report detailing construction should be submitted for our review. The WMU should be inspected by staff prior to its use.
2. Schedule for construction and closure of the WMU, along with a schedule for deposition of waste into the unit, should be provided so staff can schedule periodic inspections.
3. Although groundwater monitoring may be minimized in favor of vadose zone monitoring, a specific groundwater monitoring plan including well placement and construction details will need to be prepared, approved and thereafter implemented. SPTC will also need to develop a groundwater sampling program.
4. The design report does not indicate that all results from vadose zone monitoring will be submitted to our office. The report only indicates that the RWQCB will be contacted if a significant change in moisture content is observed. Results of all monitoring data will be required as soon as they are made available to SPTC.

I recommend that we request SPTC to address the comments and recommendations, as outlined above, prior to construction of the WMU. If modifications are made to this design, these changes will also need to be submitted for our review.

samples which contain greater than one percent asbestos are positively correlated with samples that exceed the STLC for soluble nickel. Nickel is a by-product of asbestos milling processes and is likely to be associated with asbestos ore waste.

Asbestos is a generic term referring to two groups of naturally-occurring hydrated silicate minerals having a fibrous crystalline structure. The asbestos mineral found in the New Idria Serpentine Mass is chrysotile, a fibrous mineral with an elongated, needle-like structure. Chrysotile is a short-fiber asbestos mineral. Asbestos fibers are widely used for their high tensile strength and flexibility and for their noncombustible, nonconducting, and chemical-resistant properties. The fibers have been used in insulation, brake linings, floor tile, plastics, cement pipe, paper products, textiles, and building products.

7.0 SUMMARY OF SITE RISKS

Asbestos is the primary contaminant of concern at the Site. Major sources of asbestos at the Site are contaminated soils and piles of raw asbestos ore waste. Low levels of soluble nickel in some of the asbestos tailings are of secondary concern.

Asbestos is one of the few known human carcinogens. Asbestos exposure can also cause other lung diseases, such as asbestosis. EPA considers carcinogens to be non-threshold in nature, that is, any amount of a human carcinogen in the environment represents a cancer risk to the exposed population. Asbestos has been the subject of numerous epidemiological studies. Exposure to asbestos has been positively linked to asbestosis, lung cancer, and mesothelioma. Also associated with asbestos exposure in some studies are cancers of the larynx, pharynx, gastrointestinal tract, kidney, and ovary, as well as respiratory diseases such as pneumonia. A full discussion of the health effects of asbestos is found in the EPA document Airborne Asbestos Health Assessment Update, June 1986.

Analytical results from air sampling conducted in August, 1986, March, 1987 and September-October 1987, as well as results of soil sampling conducted as part of the OUFS, form the database that were used to qualitatively assess the health risks in Coalinga. Further details of health risks in the Coalinga area related to asbestos are included in the risk assessment chapter in the Remedial Investigations for the Mine and Mill Sites.

There are two general routes of exposure to asbestos at the Site: inhalation and ingestion. Inhalation is the exposure pathway of greatest concern to human health because this pathway has been positively linked to cancer in humans. While not of primary importance, ingestion exposure to asbestos may also be associated with an increased risk of cancer. These ingestion exposures include direct ingestion of soil contaminated with asbestos and indirect ingestion of asbestos which has been inhaled.

Individuals may inhale asbestos fibers which are present in ambient air and asbestos fibers which are entrained into the air as a result of specific activities. Ambient concentrations of asbestos were detected in both on-site and off-site areas by the air monitoring conducted in 1986 and 1987. Soil disturbing activities such as children playing in or bicycle riding on asbestos-contaminated soils can resuspend asbestos fibers into the air. Vehicular traffic on unpaved areas containing asbestos contaminated soils such as truck yards and vacant lots can entrain significant amounts of asbestos into the air. Asbestos fibers stirred up by truck traffic may be inhaled by truck yard personnel and by persons living downwind from the Site. Soil concentrations of asbestos in the Site range from a geometric mean of less than one area percent to 98 area percent.

Experiments conducted by the California Department of Health Services ("DHS") in 1985 clearly show that a pickup truck driving on unpaved asbestos contaminated soil can produce asbestos dust concentrations in the air that pose a potential health risk to an individual at or nearby the activity. A detailed discussion of this experiment is included in the Remedial Investigation Report for the South Bay Asbestos Site, Alviso, California, 1988. The South Bay Asbestos Site Remedial Investigation Report has been included in the Administrative Record for this Site.

When evaluating risk from asbestos in the environment, there are sources of uncertainty associated with asbestos measurement that make quantifying the risk difficult. One of these sources of uncertainty is the difficulty of obtaining accurate and precise measurements of asbestos concentrations in soil, air, and water. For example, all risk assessments require an accurate and precise measurement of contaminant concentration. When a gaseous or soluble chemical is the contaminant of concern, the measurement of only one parameter, concentration, is sufficient to establish how much of that contaminant is present in a given sample. However it is infinitely more complex to measure the concentration of particulates accurately and precisely, especially fibrous particulates, because many more parameters must be accounted for. When measuring spherical particles the following parameters must be measured: i) the overall particle size distribution; ii) the concentration of each individual size category; and iii) the change in concentration of each size category in different parts of a dust cloud. When measuring fibrous particulates such as asbestos, the parameters become exponentially more complex. The length and diameter of each particle must be measured along with the distribution of complex shapes (such as bundles, clusters and matrices). The concentration of each different shape must be established, along with the settling velocity of different fiber shapes. Finally, there is a human component to asbestos analysis. Because all of the sampling methods for asbestos involve an individual, using an optical or electron microscope, identifying and counting miniscule asbestos fibers, the relative experience and fatigue of the person doing the counting can influence the ultimate accuracy and precision of a given analysis.

Many of the epidemiological studies which established the link between the inhalation of asbestos and cancer used phase contrast microscopy ("PCM") techniques to measure asbestos concentration. However, PCM is considered inadequate for the analysis of a short fiber mineral such as chrysotile. Many of these studies were done before transmission electron microscopy ("TEM") techniques were available. Most studies today use TEM as the "state of the art" analytical technique for measuring airborne asbestos concentrations. In the City of Coalinga, the ambient air samples were measured using TEM while the soil samples were measure using polarized light microscopy ("PLM"). Limited TEM analyses of the soils samples were used for confirmation. To use TEM data in quantitative risk assessments, one must convert TEM data to PCM Equivalent ("PCME") data using a conversion factor. There are a variety of ways to perform this conversion; whenever conversions of this type are done, the ability to describe risks quantitatively with accuracy is diminished. The Agency must make risk management decisions despite the fact that the science of risk assessment and techniques for measuring asbestos concentrations continue to evolve.

EPA has determined that because asbestos is a known human carcinogen with no acceptable known threshold level for environmental exposure, and the potential for release of asbestos from the Site is high, a significant health risk exists. While a quantitative risk assessment is not possible because of the analytical problems associated with the measurement of asbestos, a clean-up goal of less than or equal to 1 area percent by PLM is consistent with CERCLA's requirements and with past Agency decisions regarding asbestos clean-up levels at other Superfund sites. See Appendix 1 for further discussion of this clean-up level. The adverse human health effects from exposure to asbestos are extremely serious. Therefore, remedial action is warranted to mitigate the exposure to a carcinogen that is present as a result of human activity.

8.0 DESCRIPTION OF ALTERNATIVES

EPA evaluated potential remedial action alternatives for the City of Coalinga Operable Unit in accordance with CERCLA Section 121, the National Contingency Plan ("NCP"), (in particular, 40 C.F.R. Section 300.68), and the Interim Guidance on Superfund Selection of Remedy, December 24, 1986 (OSWER Directive No. 9355.0-19).

The first step in evaluating potential remedial action alternatives was to determine, based upon Site characteristics, what set of response actions and associated technologies would be considered for the Site from among all possible alternatives. An example of this preliminary determination (or "scoping") was the elimination of biological treatment from further consideration because biological processes capable of detoxifying asbestos contaminated soil do not exist. Section 2.1 of the OUFS discusses the scoping process in more detail.

The next step in the selection of remedy process was assembling the remaining technologies and/or disposal options into general remedial action alternatives. Pursuant to OSWER Directive No. 9355.0-19, remedial action alternatives are to be developed ranging from those that would eliminate the need for long-term management (including monitoring) at the Site to alternatives involving treatment that would permanently reduce the mobility, toxicity or volume of the hazardous substances(s) as their principal element. In addition, containment options involving little or no treatment and a no action alternative are to be developed. The remedial action alternatives developed in the OUFS were:

-- No Action
-- Fencing of the Contaminated Areas
-- Capping
  a) Soil
  b) Asphalt
  c) Soil-Cement
  d) Gunite
  e) Multi-Layer
-- On-Site Disposal
-- Treatment by Chemical Fixation
  a) Plant Processing
  b) Area Mixing
-- Thermal Vitrification
-- Removal and Off-Site Disposal

The No Action alternative serves as a basis for comparison in analysis of the other remedial action alternatives under consideration. Fencing of the contaminated area is an access restriction alternative involving no treatment. Capping would require long term management. On-site disposal would reduce the need for long term management at the Site. Off-site disposal would eliminate the need for long term management and monitoring at the Site (although monitoring and long term management would be required at the off-site disposal site). Chemical Fixation and Thermal Vitrification involve treatment as their principal element.

After the initial screening, the most promising of these alternatives were analyzed in greater detail in Section 2.1.2 of the OUFS. The five remedial alternatives that were fully analyzed are described in the following paragraphs:

Alternative 1: No action

This action would involve no action to treat, contain, or remove contaminated soil, equipment, or structures. Multimedia monitoring would be performed at a minimum of every five years to aid in a reassessment of the no action alternative.

Alternative 2: Off-Site Disposal at a Mine Site Near Coalinga

This alternative would involve decontamination of the buildings and disposal of all asbestos ore wastes and other mining wastes at an abandoned mine near Coalinga.

Alternative 3: Covering Waste with One Foot of Asbestos-Free Soil

This alternative would involve decontamination of the buildings, off-site disposal in an approved facility of waste mining materials stored in the Marmac Warehouse, and covering all areas of the Site that tested positive for asbestos ore waste with one foot of asbestos-free soil.

Alternative 4: Off-site Disposal of Waste in an Approved Landfill

This alternative would involve decontamination of the buildings, and disposal of all asbestos ore wastes and other mining material at an approved off-site landfill.

Alternative 5: Construction of an On-Site Waste Management Unit

This alternative would involve decontamination of the buildings, and construction of an on-site waste management unit ("WMU"). All asbestos ore wastes and other mining material would be collected and disposed of in the WMU. The material in the WMU would be capped in accordance with the California Administrative Code, Title 23, Chapter 3, subchapter 15. The conceptual design of the WMU is included in the Design Report, found in the Administrative Record (Doc. # 624).

9.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section provides an explanation of the criteria used to select the remedy, and an analysis of the five remedial action alternatives in light of those criteria, highlighting the advantages and disadvantages of each of the alternatives.

Criteria

The alternatives were evaluated based on the nine key criteria which directly relate to the factors that CERCLA Section 121(b)((1)(A-G) mandates that the Agency assess in selecting a remedy. These criteria are:

(1) overall protection of human health and the environment,
(2) short term effectiveness in protecting human health and the environment,
(3) long-term effectiveness and permanence in protecting human health and the environment,
(4) compliance with ARARs (ARARs are detailed in Section 10.0),
(5) Use of treatment to achieve a reduction in the

toxicity,mobility or volume of the contaminants
(6) implementability,
(7) state acceptance,
(8) community acceptance, and
(9) cost.

Because there is no feasible treatment technology for asbestos containing mining materials, criterion number five is not directly relevant to a choice among alternatives. However, the alternatives were compared with respect to their ability to minimize the mobility (through the air or ground water pathways) of the asbestos-containing material. Criterion number six, implementability, is also not a factor in choosing among alternatives. Implementability is the technical and administrative feasibility of a remedy as well as the availability of services and materials to carry out the remedy. All five alternatives are equally implementable. For these reasons, neither of these criteria are included in the following comparison of alternatives.

Alternative 1 - No action Alternative

This alternative would not reduce present or future exposure to hazardous substances at the Site, and thus would not be protective of human health and the environment. The risk to human health and the environment would not be addressed. Although this is the least expensive alternative, it would not achieve compliance with ARARs and would not provide a permanent solution.

Alternative 2 - Removal of Wastes to the Mine Sites

The environmental and public health protection provided by this alternative is better than the no action alternative but less than alternatives four or five. Environmental degradation is expected to increase over time. Increased exposure to the contaminants would occur during implementation; engineering controls would be implemented during the collection of contaminated soils that would minimize this potential for exposure. Transportation and off-loading operations at the abandoned mine site would result in additional exposure as compared to on-site disposal. The lengthy amount of time needed to implement this alternative would also result to increased risk because of the period of no action at the Site. Contrary to the OUFS' conclusion that this alternative would satisfy all ARARs, this alternative would not meet the requirements of California Administrative Code, Title 22 with respect to Class B Mining Wastes); it would also not meet the NESHAP requirements at 40 C.F.R. § 61.153. This alternative is expected to meet with community approval based on the community's express desire to have the wastes removed from the City. State perception of this alternative is expected to be negative.

The cost of this alternative is extremely high. Costs would include the extension and/or repair of roads and utilities to the chosen mine site. The cost for this alternative is estimated at $7 to $9 million and is the highest of all alternatives considered. The schedule to implement this alternative is estimated at one to two years due to the need for road construction.

Alternative 3 - Covering Waste with Non-Contaminated Fill

The human health risk during implementation of this alternative would be moderately high. As in alternative 2, engineering controls would be implemented that would minimize the exposure during movement of mining wastes. Long term protectiveness of human health and the environment would be less than that achieved with alternatives 2, 4 or 5 because the asbestos ore waste would remain under the clean soil cover and could be disturbed by human activity or natural processes, such as an earthquake.

This alternative would meet federal ARARs for the disposal of asbestos waste but would not meet State ARARs for disposal of a class B mining waste. The Site would require long term operation and maintenance of a more significant nature than that required by any of the other alternatives. This alternative includes leaving hazardous material on-site. Therefore, review of the remedial action at five year intervals would be required pursuant to CERCLA Section 121(c), 42 U.S.C. § 9621(c). Also, deed restrictions would be placed on a large portion of Coalinga, thus limiting future land use.

Alternative 3 is the least costly of the alternatives which provide active remediation. The estimated cost is between $600,000.00 and $800,000.00. Alternative 3 could be implemented in approximately four months. This alternative would negatively impact the future development in Coalinga and would leave a high public health risk in the town.

Alternative 4 - Removal of Waste to an Off-Site Landfill

This alternative would provide adequate protection of human health and the environment. Short term risk to human health and the environment would be moderate and would occur during the onsite operations, transport of the contaminated material, and placement in the new disposal location. During these operations, engineering controls would be implemented to minimize this risk. This alternative would achieve compliance with all ARARs. This alternative received favorable consideration by the community. State perception of this alternative is expected to be negative because valuable landfill space would be occupied.

The cost of this alternative would be high. The estimated cost is $5.5 million, with the majority of this cost being the cost of disposing of the material in the off-site landfill. This alternative could be implemented in four to six months.

Alternative 5 - Disposal of Material in an On-Site Landfill

This alternative would provide adequate protection of human health and the environment. Exposure would occur during movement of the wastes on-site. The short term risk to public health and the environment from this exposure route is less than that expected with Alternative 4, because contaminated materials will be transported a shorter distance (to the WMU site). Engineering controls would be implemented to minimize any short term risk. This alternative would achieve compliance with all ARARs. Long term operation and maintenance would be required, as would a review at five year intervals pursuant to CERCLA Section 121(c), 42 U.S.C. § 9621(c).

This alternative raised community concerns over the location and visual impact of the WMU. To alleviate these concerns, EPA will require modification of the WMU specifications to reduce the height of the WMU crown to as close to grade level as is technically feasible.

The cost for this alternative is approximately $1.5 to 2.5 million. This alternative could be implemented in approximately four to six months.

Further Discussion of Specific Criteria

The following discussion provides a more-detailed analysis of several of the comparative aspects of the five alternatives.

Overall Protection of Human Health and the Environment

Alternatives 4 and 5 provide the most protection of human health and the environment of all the alternatives. Alternatives 4 and 5 are essentially equal in their overall protection of human health and the environment, except that alternative 4 involves somewhat greater exposure during implementation. While there is no feasible treatment technology for asbestos-containing mining materials, alternatives 4 and 5 reduce mobility of asbestos fibers by eliminating entrainment into the air of asbestos laden soils and dust. Alternatives 2 and 3 are not as protective of human health and the environment in that environmental degradation may increase over time. Alternative 2 would remove the threat to Coalinga in the short term, but would exacerbate the overall regional public health and environmental risks because the mine site would receive uncontained mining waste piles. Alternative 3 would leave areas containing asbestos-contaminated soils more readily subject to disturbance by human activities as well as natural disasters (such as an earthquake). Alternative 1 provides no protection to human health or the environment.

Compliance with ARARS

Alternatives 4 and 5 would achieve compliance with ARARs. Alternatives 2 and 3 would violate the State of California ARARs for disposal of a class B mining waste; Alternative 2 would violate the NESHAP ARAR found at 40 C.F.R. § 61.153.

Long-term Effectiveness and Permanence

Alternatives 4 and 5 have the greatest ability to maintain reliable protection of human health and the environment over time, once clean-up goals have been met. The disposal of the asbestos ore wastes and other mining waste materials in an approved landfill or waste management unit is the best way to ensure that asbestos fibers are not released into the air, ground water or surface water pathways. Alternative 5 will achieve long-term effectiveness and permanence as long as the cap integrity is maintained.

Alternative 2 would not be as effective as alternatives 4 and 5 in the long term because, in moving the material from a populated area to a more remote area, future releases of the material from the remote area are not mitigated. The long term effectiveness of alternative 3 is less than that of alternatives 2, 4 and 5 because human activity or a natural disaster could more easily disturb the material.

Short Term Effectiveness

Alternative 1, No Action, would have the least short term impact because it would not generate additional dust or impact on community life, provided access to the Site was restricted. Alternative 3 will generate less dust than Alternatives 2, 4 and 5 because the consolidation and removal in Alternative 3 would be restricted to the Marmac Warehouse. Alternative 2 and 4 will be less effective in the short term than Alternatives 3 and 5 because the transportation and off-loading operations at the off-site locations could have an adverse impact on the health of site personnel. Alternatives 2, 3 and 4 will disrupt traffic to some extent because they involve trucking the waste material off-site. Alternative 5 will have somewhat less impact on traffic in Coalinga. All of the alternatives, other than No Action, will create some noise during removal and construction which may be bothersome in the short term.

Community Acceptance

The community would like the clean-up to proceed as quickly as possible and would like the contaminants to be removed from the Coalinga city limits. Alternative 4 received the most community acceptance.

With respect to Alternative 5, community members expressed concern over the location of a WMU within the city limits, particularly if the WMU is not at or close to ground level. The Coalinga City Council expressed concern over the technical sufficiency of the WMU design. The City Council also prefers the location of the WMU to be within the right-of-way of a future road. EPA and State officials re-examined the WMU proposal in light of these concerns and decided to alter the design specifications for the WMU to require that the cap be as close to ground level as is technically feasible. This was done in order to minimize potential impacts on local development plans. The re-examination also confirmed that the WMU meets all regulatory specifications. The WMU is located in an area identified as a future right-of-way; however, the boundaries of the WMU would extend beyond the width of the right-of-way as currently designed. EPA is not requiring that the WMU be designed to conform to current right-of-way plans; however, EPA is not putting restrictions on land use in the WMU area that would preclude the area being used as a road or a parking structure.

The community is not in favor of Alternative 3 because it would remove too much land from future development. Community acceptance of Alternative 2 is expected to be favorable based on the community's express desire to have the hazardous substances removed from the City.

The attached Responsiveness Summary attached addresses more specific concerns raised by members of the public during the public comment period.

10.0 APPLICABLE or RELEVANT and APPROPRIATE REQUIREMENTS (ARARs)

Under Section 121(d)(1) of CERCLA, 42 U.S.C. § (d)(1), remedial actions must attain a degree of clean-up which assures protection of human health and the environment. Additionally, remedial actions that leave any hazardous substance, pollutant, or contaminant on-site must meet a level or standard of control that at least attains standards, requirements, limitations, or criteria that are "applicable or relevant and appropriate" under the circumstances of the release. These requirements, known as "ARARs", may be waived in certain instances, as stated in Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4).

"Applicable" requirements are those clean-up standards, standards of control and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant or contaminant, remedial action, location, or other circumstance at a CERCLA site. "Relevant and appropriate" requirements are clean-up standards, standards of control and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a

CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. For example, requirements may be relevant and appropriate if they would be "applicable" but for jurisdictional restrictions associated with the requirement. See the National Contingency Plan, 40 C.F.R. Section 300.6, 1986).

The determination of which requirements are "relevant and appropriate" is somewhat flexible. EPA and the State may look to the type of remedial actions contemplated, the hazardous substances present, the waste characteristics, the physical characteristics of the site, and other appropriate factors. It is possible for only part of a requirement to be considered relevant and appropriate. Additionally, only substantive requirements need be followed. If no ARAR covers a particular situation, or if an ARAR is not sufficient to protect human health or the environment, then non-promulgated standards, criteria, guidance, and advisories must be used to provide a protective remedy.

Types of ARARs

There are three types of ARARs. The first type includes "contaminant specific" requirements. These ARARs set limits on concentrations of specific hazardous substance, pollutants, and contaminants in the environment. Examples of this type of ARAR are ambient water quality criteria and drinking water standards. The second type of ARAR includes location-specific requirements that set restrictions on certain types of activities based on site characteristics. These include restriction on activities in wetlands, floodplains, and historic sites. The third type of ARAR includes action-specific requirements. These are technology-based restrictions which are triggered by the type of action under consideration. Examples of action-specific ARARs are Resource Conservation and Recovery Act ("RCRA") regulations for waste treatment, storage, and disposal.

ARAR Identification Process

ARARs must be identified on a site-specific basis from information about specific chemicals at the site, specific features of the site location, and actions that are being considered as remedies.

ARARs identified for the Operable Unit address emission of asbestos fibers from contaminated soils, inhalation of asbestos fibers, and disposal of asbestos contaminated soils. In addition, ARARs for disposal of mining waste containing soluble nickel were also identified.

Contaminant-Specific ARARs For Asbestos:

1. Toxic Substances Control Act (TSCA)

EPA has promulgated several rules under TSCA to regulate asbestos in the environment. The most significant of these were promulgated pursuant to the Asbestos Hazard Emergency Response Act ("AHERA"), which was enacted as Title II of TSCA. Under the AHERA, EPA issued regulations related to the inspection and management of friable asbestos in schools (52 C.F.R. § 42826 (1987)). This regulation utilizes PLM as a measurement technique for detecting asbestos; the use of this measurement technique for asbestos is relevant and appropriate to the cleanup of the Coalinga Site.

2. Clean Air Act, National Emission Standard for Hazardous Air Pollutants (NESHAPs)

Asbestos was first designated as a hazardous air pollutant under the Clean Air Act in 1971. The National Emission Standard for Hazardous Air Pollutants ("NESHAPs") for asbestos found at 40 C.F.R. § 61.152 and 40 C.F.R. § 61.156 are ARARs for the implementation of the remedy at this Site. 40 C.F.R. § 61.153 is an ARAR for the completion of the remedy at the Site.

Location-Specific ARARs:

Because the Site is located in an area that contains endangered species (i.e., the kit fox and the blunt-nosed leopard lizard), the following requirements are ARARs for the Site:

1. The Endangered Species Act of 1973, 16 U.S.C. § 1536(a)(-(d)

Generally, when a project potentially impacts an endangered species or critical habitat, activities carried out by Federal agencies should not jeopardize the continued existence of an endangered species or cause adverse modifications of critical habitat.

2. USFWS Mitigation Policy (FR 7644-7663, Vol 46, No. 15, January 1981).

This policy is triggered in accordance with the Fish and Wildlife Act of 1956, Fish and Wildlife Coordination Act, Watershed Protection and Flood Prevention Act and the National Environmental Policy Act. The mitigation policy defines resource categories and establishes mitigation goals and guidelines for each. Guidelines to achieve the goal include avoiding or minimizing habitat loss, immediate rectification or reduction of habitat loss or replacement of habitat in kind.

Action Specific ARARs:

1. Occupational Safety and Health Administration ("OSHA")

OSHA has set a permissible exposure limit ("PEL") for all asbestos fibers at 0.2 fiber per cc for occupationally exposed workers (51 C.F.R. § 22612 (1986)). While this standard was meant for occupational exposure (8 hours per day, 40 hours per week, 52 weeks per year) and not for continuous ambient exposure, it provides an upper threshold for evaluating permissible ambient exposure limits. In other words, a concentration of .2 PCM fibers per cc of respirable air or less is not permissible for ambient exposure, since this requirement is relevant and appropriate for exposure during the cleanup of this Site.

Contaminant-Specific ARARS for Soluble Heavy Metals:

1. California Administrative Code, Title 22

Title 22, Chapter 30, Section 66740 (a) of the California Administrative Code lists "...wastes which shall be classifiable as special wastes pursuant to Section 66744 provided they meet the criteria and requirements of Section 66742". The California State Water Quality Control Board ("SWQCB") has classified nickel-containing wastes such as those at the Site as Class B mining wastes, as described in Title 23, Chapter 3, subchapter 15, Section 2571(b)(2). Under California regulations (Title 23, Subchapter 15) a Class B mining waste must be disposed of in a capped landfill. This requirement is an ARAR for the Site.

Location Specific ARARs for Soluble Heavy Metals:

1. California Administrative Code

Pursuant to Title 23, Chapter 3, Subchapter 15, Article 7, Section 2570(b), a mining waste pile, including a waste management unit, may be exempted from the liners and leachate collection and removal system requirements of Article 7, Section 2572, if it can be demonstrated that leachate will not form in or escape from the waste management unit ("WMU"). Section 2570(c) allows the RWQCB to exempt a Group B mining waste management unit from these liner and leachate requirements of Article 7 if a comprehensive hydrogeologic investigation demonstrates that:

" (1) there are only very minor amounts of groundwater underlying the area; or

(2) the discharge is in compliance with the applicable water quality control plan; and

(3) either natural conditions or containment structures will prevent lateral hydraulic interconnection with natural geologic materials containing ground water suitable for agricultural, domestic or municipal beneficial uses. There is no detectable vertical hydraulic interconnection between the natural geologic materials underlying the unit and natural geologic materials containing such ground water." Article 7, Section 2570(c).

The WMU for this Site is appropriately exempted from these liner and leachate provisions on the basis that the requirements of Article 7, Section 2570(c)(1), and alternatively, the requirements of (2) and (3), are met. See the memorandum from the California Central Valley Regional Water Quality Control Board ("CVRWQCB"), dated April 7, 1989, Administrative Record Doc. # 1075, attached as Appendix 2 to this ROD, and hereby incorporated by reference. The requirements of this Appendix 2 must be met for full implementation of this ROD.

The Class B mining waste regulations found at Title 23, Chapter 3, Subchapter 15, Section 2571, (b) (2) (A) of the California Administrative Code are satisfied by either (1) removal of the asbestos ore waste and other mining waste to a capped landfill or (2) burial of the asbestos ore waste and other mining waste in an on-site WMU. Cap requirements are outlined in Title 23, Chapter 3, Subchapter 15. If the waste is stored in an on-site WMU, the regulations require that a groundwater monitoring be located at the point(s) of compliance. Title 23, Chapter 3, Subchapter 15, Section 2553.

11.0 THE SELECTED REMEDY

Alternative 5, disposal of the asbestos ore waste and other mining waste in an on-site waste management unit ("WMU"), is the selected remedy for the City of Coalinga Operable Unit. This includes collection and on-site disposal of all asbestos ore waste and other mining waste material as well as decontamination of all buildings, structures and other equipment at the Site. The excavated areas will be regraded with clean material, containing less than or equal to one area percent asbestos by PLM. The WMU will be constructed in accordance with California Administrative Code, Title 23, Chapter 3, Subchapter 15; the WMU is exempt from the liner and leachate collection requirements of Article 7 of this Subchapter.

The wastes are asbestos with some soluble nickel. Asbestos is insoluble and thus poses does not pose a significant threat to the groundwater. Any leachate movement through the unsaturated zone to the ground water will be very slow and is unlikely to carry asbestos in suspension. The waste does not generate acid and therefore leachate containing soluble nickel is not likely to be produced. In addition, the ground water in the Coalinga area is not potable. All of the drinking water used by the City of Coalinga is taken from the California Aqueduct.

All contaminated soils and other similar materials will be cleaned up to less than or equal to one area percent asbestos by PLM and to at or below background for nickel. A positive correlation between the presence of asbestos and nickel has been established at the Site. As the asbestos-contaminated areas are being remediated, the nickel-contaminated areas will also be remediated. The contaminated soils and other materials occupy an area of approximately 11 acres and total approximately 14,500 cubic yards.

A major feature of the selected remedy is the construction of the WMU. The WMU will measure approximately 225 feet square, have a capacity of 25,000 cubic yards and will be designed and constructed to comply with all ARARs. The final cover or cap will consist of the following (from bottom to top):

-- A two foot foundation layer of compacted clean material that contains less than or equal to 1 area percent asbestos by PLM.

-- A one quarter inch impermeable bentonite mat with a permeability of less than 10 E -6 cm/sec.

-- A protective soil cover that contains less than or equal to one area percent asbestos by PLM and is at least one foot in thickness.

-- Either a four inch asphalt concrete paving or a vegetated cover.

The design will include two neutron probe access tubes to detect increases in moisture content due to leachate migration. In addition, ground water monitoring well(s) will be required within one quarter mile of the perimeter of the WMU.

The WMU will be constructed to prevent the ponding of water on the cap. The cap will be situated as close to grade level as is feasible. Strict asbestos/dust control measures will be implemented during the entire construction of the WMU and the collection and consolidation of the asbestos ore waste and other mining material. These activities will comply with the NESHAPs ARARs. In addition, ambient air sampling (with associated meteorological monitoring) and personnel monitoring will be conducted during construction and removal activities to fulfill the following objectives:

1) Ensure that asbestos/dust control measures are effective in containing fugitive contaminant emissions,

2) Ensure that the remedial activity is not affecting the surrounding community through the spread of fugitive asbestos fibers, and

3) Document exposure levels of site personnel work activities to determine compliance with appropriate levels of protection for workers.

A verification sampling plan will be instituted to confirm that the cleanup levels have been achieved for the soil and other materials. The building structures will also be sampled to verify removal of asbestos from contaminated surfaces.

Operation and maintenance activities will be required to ensure the effectiveness of the WMU. These activities include: (1) quarterly visual inspections to ensure the integrity of the cap for three years, with annual visual inspections thereafter, (2) any repair work necessary to maintain the integrity of the cap, including maintenance of the vegetation, (3) groundwater monitoring, and (4) monitoring of soil moisture content using neutron probes. EPA will review the remedial actions effectiveness at five year intervals, pursuant to CERCLA Section 121(c), 42 U.S.C. § 9621(c).

The chromite ore waste ("chromite waste") in the Marmac Warehouse will be disposed of in the WMU unless the chromite waste has been removed from the site by October 16, 1989, pursuant to an EPA approved plan. Any draft plan for removal and disposition of the chromite waste must be submitted to EPA by August 15, 1989 and must include:

1. an adequate health and safety plan that protects on-site personnel;
2. a work plan that provides for the safe removal of the chromite waste material from the Marmac Warehouse and transport to a bona fide recycling/reprocessing facility for recycling and/or reprocessing;
3. adequate documentation from a bona fide recycler/reprocessor that the chromite waste will be handled properly upon receipt at the recycling/reprocessing facility. This documentation must include, but is not limited to: a) copies of all necessary permits, b) details of process to be used to extract the chromium, and c) details of how any asbestos-contaminated residue will be disposed of; and
4. Provisions for compliance with all applicable laws regarding transport of hazardous substances

A final plan must have received EPA approval by September 15, 1989.

The WMU design and associated monitoring activities will be in accordance with the recommendations provided in the CVRWQCB memorandum of April 7, 1989, attached as appendix 2. In addition, a geologist registered by the State of California will observe the excavation of the WMU area to ensure that no geologic faults occur in the area of the WMU.

Using a conservative estimate of $2.5 million, the cost for disposal in the WMU is estimated at $170 per cubic yard, assuming 14,500 cubic yards of contaminated material. Operation and maintenance costs are estimated at $35,000/year. Total present worth cost for the selected alternative is between 1.5 and 2.5 million dollars.

12.0 DOCUMENTATION of SIGNIFICANT CHANGES

The selected alternative for the Site is construction of an on-site WMU and accompanying measures, as detailed in Section 11.0, above. At this time no significant changes from the proposed plan have occurred.

13.0 STATUTORY DETERMINATIONS

Overall Protection of Human Health and the Environment

The selected remedy protects human health and the environment by minimizing exposure to asbestos- and nickel-contaminated materials. The selected remedy also provides for clean-up to the AHERA levels for asbestos abatement and to levels at or below background levels for nickel. Proper operation and maintenance practices will ensure the integrity of the WMU. Strict dust control procedures will be followed during construction. Proper health and safety measures, including ambient air monitoring and personnel monitoring during implementation, will ensure that the health of on-site workers and the local population is protected.

Cost-Effectiveness

The selected remedy is cost-effective in that it provides overall effectiveness commensurate to its costs. The estimated costs of the selected remedy are less than half the costs associated with the removal of the waste to an off-site landfill (Alternative 4), and yet the selected remedy and Alternative 4 are similar in terms of the level of public health and environmental protection provided, except that off-site disposal would involve somewhat greater exposure risk during implementation.

Compliance with ARARs

The selected remedy will comply with all ARARs. Identified ARARs are presented below.

Action-specific ARARs

OSHA requirements for permissible exposure limit (PEL) in 51 C.F.R. 22612 (1986), which specify a PEL for all asbestos fibers at 0.2 fibers per cubic centimeter for occupationally exposed workers.

Contaminant-specific ARARs

PLM measurement technique for asbestos, pursuant to AHERA regulations.

NESHAP requirements found at in 40 C.F.R. § 61.152, 40 C.F.R. § 61.153, and 40 C.F.R. § 61.156.

Title 22, Chapter 30, Section 66740(a) of the California Administrative Code, which classifies the nickel-bearing waste as a special waste.

Title 23, Chapter 3, Subchapter 15, Article 7, Section 2571(b)(2), which classifies the waste as a class B mining waste. Under Subchapter 15, class B mining wastes must be disposed of in a capped landfill. The WMU is exempt (pursuant to Section 2570) from the liner and leachate requirements found in Article 7 of this Subchapter.

Location-specific ARARs

Endangered Species Act of 1973, 16 U.S.C. § 1536 4(a) - (d), regarding endangered species and critical habitat.

USFWS Mitigation Policy establishes guidelines for minimizing habitat loss (FR 7644-7663 Volume 46 number 15 January 1981).

Utilization of Permanent Solutions to the Maximum Extent Practicable

Currently there is no known permanent treatment or resource technology which would control release of asbestos from the soil at the Site. Chemical fixation and thermal vitrification were alternatives identified in the Feasibility Study but they were eliminated from further consideration due to difficulties associated with implementation, uncertain long term effectiveness and very high cost. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined, and the State has concurred, that the selected remedy provides the best balance of the various factors that CERCLA requires be considered in remedy selection.

The selected remedy is preferable to off-site disposal with respect to short term effectiveness and cost. Since the selected remedy and the off-site disposal alternative are reasonably comparable with respect to protection of public health and the environment, long term effectiveness, ARARs compliance, and implementability, the major tradeoffs that provide a basis for this selection decision are short term effectiveness, community acceptance, state acceptance, and cost. The selected remedy has better short term effectiveness, is more acceptable to the state, and can be performed at less cost than the other alternatives; it also can be performed in a relatively short time frame compared to some of the alternatives. It is therefore determined to be the most appropriate solution for the contaminated soils at the City of Coalinga Operable Unit.

Preference for Treatment as a Principal Element

Currently there is no proven treatment technology that would permanently and significantly reduce the mobility, toxicity or volume of asbestos. Since no effective treatment method exists for asbestos, the statutory preference for this type of treatment as a principle element of the remedy cannot be satisfied. Although several treatment technologies were investigated during the feasibility study, it was determined that no technology presently exists that would result in a permanent and significant decrease in the toxicity, mobility or volume of asbestos. Alternative 5 was found to represent the best method for addressing the threats posed by the Site, taking into account all of the statutory requirements and preferences.

CITY OF COALINGA
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0100.15	574	Health Effects of Asbestos w/letter	Richard A. Griesemer	Lee M. Thomas	7/30/85
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0100.15	580	Asbestos in Drinking Water - A Canadian View	P. Toft		no date
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0100.15	583	Asbestos: Properties, Applications & Hazards, vol. 2	S.S. Chissick		no date
0100.15	584	In vitro Approaches for Determining Mechanisms of Toxicity	Brooke T. Mossman		no date
0100.15	585	Critical Review of Epidemiologic Studies	Gary M. Marsh		10/13/82

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0100.15	599	ASTDR Policy on Health Assessments			5/87
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0100.15	602	EPA: National Revised Primary Drinking Water Reg.	Federal Register, vol. 48, no. 194		10/5/83
0100.15	627	Strategy for Asbestos Hazard Identification	ICF/Clement Associates	Camp Dresser & McKee	9/18/87
0100.15	628	Technical Support Doc: Public Hearing to Consider the Adoption of a Reg. Amend.	CA Air Resources Board		2/10/86

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0100.15	631	Federal Register v. 50, no. 219: Asbestos			11/13/85
0100.15	632	Memo re: MCL for Asbestos in Drinking Water	Frank M. Covington	John Wise	11/15/83
0100.15	633	Groundwater Newsletter v. 12, no. 20 (Oct. 31, 1983) w/letter	Ronald D. Kill	Richard Martyn	12/1/83
0100.15	634	EPA: 40 CFR Pt. 61 National Emmission Standards for Hazardous Air Pollutants.. Final Rule	Federal Register, vol. 49, no. 67		4/5/84
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0100.15	708	Minerals and Health: The Asbestos Problem	Malcolm Ross		no date
0100.15	709	Asbestos: Toward a Perspective	H. Wesley Peirce		1983
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0100.15	713	EPA: 40 CFR Pt 763: Asbestos-containing Materials in Schools, Final rule and Notice	Federal Register, vol. 52, no. 210		10/30/87

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0100.15	735	Map: California Natural Diversity Data Base	CA Dept. of Fish and Game		10/83
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0100.15	838	Filter Blank Contamination in Asbestos Abatement	Thomas J. Powers		4/24/86
0100.15	839	Characterization of Three Types of Chrysotile Asbestos	Kent E. Pinkerton		1983
0100.15	840	Correlation of In Vitro And Vivo Methods	David L. Coffin		1983
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0100.15	852	Serpentine Flows on Joaquin Ridge	Darrel S. Cowan		9/70
0100.15	853	Mineral & Water Resources of California			1966
0100.15	854	California Asbestos Industry	Salem J. Rice		9/63
0100.15	855	Ambient Air Concentrations of Asbestos Fibers	Bhawan Singh		3/5/84
0100.15	856	Dredging to Reduce Asbestos Concentrations	Jeanine Jones		2/87
0100.15	857	Accuracy of Transmission Electron Microscopy	Eric B. Steel		1/85
0100.15	858	Field Monitoring of Chrysotile Asbestos	Steven B. Hayward		3/84
0100.15	859	Membrane-filter, Direct Transfer Technique for the Analysis of Asbestos	Garry J. Burdett		1983

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DOCUMENT CATEGORY	DOCUMENT NUMBER	DESCRIPTION SUBJECT	FROM	TO	DOCUMENT DATE
0100.15	860	Measurement of Asbestos Fibre concentrations	Eric J. Chatfield		5/83
0100.15	861	Asbestos in California Water. Draft	Stephen B. Hayward		7/83
0100.15	881	Major Issues with Health Effects of Asbestos w/letter	EPA - Science Advisory Board		no date
0100.15	882	Memo: Site Characterization	Chris Chalfany	Ruben Moreno	8/29/88
0100.15	886	Ltr re: City Construction	Robert Willey	L.W. Pepple	5/2/88
0100.15	887	Article: Asbestos	BNA: Environmental Reporter		11/9/84
0100.15	898	Fact Sheet: Asbestos Substitute Materials & Producers	Western Institute for Occupational & Environmental Sciences		1981
0100.15	904	Environmental News Fact Sheet	EPA		10/11/85
0100.15	908	Clipping: Cleanup at New England Asbestos Dump Shows Costs Can Offset Health...	Raymond Joseph		9/13/83
0100.15	909	Article re: Asbestos	Environmental Engineering News		7/84
0100.15	922	Clipping: Asbestos in the Western San Joaquin Valley	Jeanine Jones/ California Geology		7/88
0100.15	923	Clipping: 1987 California Mining Review	California Geology/ John Burnett		10/88
0100.15	924	Environmental News Fact Sheet re: Phase Out Asbestos Use	EPA		1/23/86
0100.15	989	Draft Excerpt re: Asbestos Analytical Methods	Charles E. Robinson	Jennifer Decker	8/11/88
0100.15	998	Percent by Area Diagrams	Randy Boltin	Jennie Decker	8/9/88

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0100.15	1001	Cancer and Asbestos in Drinking Water	West Coast Cancer Foundation		3/27/80
0100.15	1002	Airborne Asbestos Health Assessment Update	EPA		6/86
0100.15	1003	Chronic Hazard Advisory Panel	US Consumer Product Safety Commission		7/83
0100.15	1004	Characterization & Control of Asbestos Emissions	C.F. Harwood		9/74
0100.15	1006	Determinants of Cancer and Cardiovascular Disease Mortality	R.A. Ziskind		no date
0100.15	1007	Study of the Problem of Asbestos in Water	American Water Works Association		9/74
0100.15	1008	Health Aspects of Asbestos in Drinking Water	Robert C. Cooper		6/75
0100.15	1009	Exposure to Asbestos Fibers in Water Distribution Systems	Richard S. Woodhill		5/8/77
0100.15	1010	Some Aspects on the Dosimetry of the Carcinogenic Potency	Freidrich Pott		12/78
0100.15	1011	Asbestos: Warning, Dangerous to Health			12/78
0100.15	1012	Ingested Mineral Fibers	Philip M. Cook		4/79
0100.15	1013	Health Effects & Prevalence of Asbestos Fibers	Leland J. McCabe		6/24/79
0100.15	1014	Asbestos: Expedience, Exposure & Human Experience	Michael R. Gray		no date
0100.15	1015	Preparation of Extrapulmonary Tissues	Philip M. Cook		12/14/79
0100.15	1016	Effects of Long-term Ingestion of Asbestos	Kelley J. Donham		1980

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0100.15	1017	Evidence of Migration of Ingested Asbestos	Kusum J. Patel-Manalik		1980
0100.15	1018	Asbestos in Drinking Water & Cancer Incidence	Marty S. Kanarek		1980
0100.15	1019	Pathological Effects of Prolonged Asbestos Ingestion	R.E. Bolton		1982
0100.15	1020	Cancer Causing Chemicals - Asbestos			1981
0100.15	1021	Assessment of Risks Posed by Exposure	Marvin A. Schneiderman		4/81
0100.15	1022	Cancer Morbidity Investigations	Eunice E. Sigurdson		1981
0100.15	1023	Determination of Mineral Fiber Concentrations in Fish	A.R. Batterman		4/24/81
0100.15	1024	Mineral Fiber Contamination of Western Lake Superior	Philip M. Cook		1/6/81
0100.15	1025	Policy Problems Associated with Waterborne Asbestos	Michael Sheehan		4/81
0100.15	1026	Relation of Particle Dimension to Carcinogenicity	Mearl F. Stanton		11/81
0100.15	1027	Interpretation of the Carcinogenicity of Amosite	Philip M. Cook		2/17/82
0100.15	1028	Pathogenesis of Asbestos-Associated Diseases	John E. Craighead		6/17/82
0100.15	1029	Public Health Aspects of Water Supplies	CA Dept. of Water Resources		12/31/82
0100.15	1030	Short and Thin Mineral Fibers	E.J. Chatfield		no date
0100.15	1031	Asbestos Drinking Water: A Status Report	Joseph A. Cotruno		1983

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0100.15	1032	Drinking Water and Health, vol. 5	National Research Council		1983
0100.15	1033	In Vitro Effects of Mineral Fibers	Lalita D. Palekar		1983
0100.15	1034	Review of Published Studies on Gut Penetration	Philip M. Cook		1983
0100.15	1035	Bibliographies from Online Computer Databases			8/4/83
0100.15	1036	Summary: Workshop on Ingested Asbestos			10/13/83
0100.15	1037	Groundwater Newsletter			10/31/83
0100.15	1038	Groundwater News			2/84
0100.20	608	Reconaissance Report: Soil & Air Sampling Strategy	Al Vargas & Sean Kennedy	Jennifer Decker	5/6/87
0100.20	609	Memo re: Retaining FIT Contractors for Sampling Event w/map and Photos	Jenny Decker	Amy Zimpfer	4/13/87
0100.20	611	Memo re: Soil Sampling Plan w/attached Memo	Stewart Simpson & Greg Czajkowski	Jennifer Decker	6/12/87
0100.20	612	List of Sample Locations			7/7/87
0100.20	652	CERCLA Soil Sampling Plan	Sean Kennedy	EPA	6/5/87
0100.20	654	Soil Sampling Plan Approval	Stewart Simpson and Greg Czajkowski	Jennifer Decker	6/12/87
0100.25	603	4 Aerial Photos, 2 Photos of Building			no date
0100.25	605	Aerial Photo			no date
0100.25	653	Sample Documentation Report	Ecology & Environment	EPA	9/7/87

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0500.01	651	Atlas and Coalinga PRP Mailing List			no date
0500.01	661	Ltr re: Asbestos Cleanup	David W. Long	Scott Rahlfs/City Manager	5/4/88
0500.01	754	Ltr re: Other PRP's. Attached: 9/14/87 Letter	David W. Long	EPA	12/28/87
0500.01	756	Ltr re: Advice Regarding Di-minimus Status	Jennifer Decker	Carla J. Irvine	9/20/88
0500.01	761	Ltr re: Request for Further Information	David B. Stanton	Jennifer Decker	11/1/88
0500.01	762	Ltr re: Request for Information - Wheeler Properties	Dorothy G. Bunce/Reno, NV	Jennifer Decker	7/5/88
0500.01	764	Ltr re: Property Ownership	Bob J. Wampton	Jennifer Decker	7/7/88
0500.01	765	Ltr re: Responsibility for Asbestos Removal	John W. Johns	Jennifer Decker	6/30/88
0500.01	766	Ltr re: Asbury Transportation Co. Liability	Dean Prettyman	Jennifer Decker	6/21/88
0500.01	767	Ltr re: California Minerals Corp.	Claude W. Bridges	Jennifer Decker	6/21/88
0500.01	768	Ltr re: Potential Liability	Richard E. Blubaugh	Jennifer Decker	6/24/88
0500.01	769	Ltr re: Kern County Land Co.	David B. Stanton	Jennifer Decker	5/23/88
0500.01	770	Ltr re: Westside Trucking	Henry T. Leckman	Jennifer Decker	6/29/88
0500.01	771	Ltr re: Marmac	Carla J. Irvine	Jennifer Decker	8/9/88
0500.01	772	Ltr re: Willingness to Participate in Response Activities	Richard E. Blubaugh	Jennifer Decker	7/22/88
0500.01	773	Ltr re: Notice Letter	David B. Stanton	Jennifer Decker	7/19/88

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0500.01	774	Ltr re: Notice Letter	Robert K. Behrens	Jennifer Decker	8/9/88
0500.01	775	Ltr re: Transport of Material	John D. Clarke		5/27/88
0500.01	797	Ltr re: Other PRP's	David W. Long	EPA	9/14/87
0500.01	805	Ltr re: Response to 106(a) Regarding Ownership	David W. Long	EPA	8/28/87
0500.01	943	Response to Notice Letter	Claude W. Bridges	Jennifer Decker	6/21/88
0500.01	944	Ltr re: Notice Letter	John W. Johns	Jennifer Decker	6/30/88
0500.01	945	Ltr re: Extension of Response Date	David E. Noyes	Jennifer Decker	5/16/88
0500.01	946	Ltr re: Participation in Response Activities	David E. Noyes	Jennifer Decker	6/23/88
0500.01	947	Ltr re: Correction to Previous Letter	David E. Noyes	Jennifer Decker	7/8/88
0500.01	948	Response to Notice Letter	Bob J. Hampton/ Coalinga, Ca	Jennifer Decker	7/7/88
0500.01	949	Ltr re: Briefing Meeting	Philip L. Fitzwater	Jennifer Decker	8/26/88
0500.01	950	Response to Notice Letter	David E. Noyes	Jennifer Decker	7/7/88
0500.01	951	Ltr re: Briefing	George M. C. Robinson	Jennifer Decker	9/22/88
0500.01	952	Response to Notice Letter	David B. Stanton	Jennifer Decker	6/20/88
0500.01	953	Response to EPA Letter of 6/13/88	Dean Prettyman	Jennifer Decker	6/21/88
0500.01	992	Ltr re: Potential Liability	Richard E. Blubaugh	Jennifer Decker	6/24/88
0500.10	728	Telecommunication re: Compliance w/Section 106 Order	David Long	Bill Wick	8/26/87
0500.10	729	Telecommunication re: Compliance w/Section 106 Order	Lewis Mitani	David Long	8/26/87

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0500.20	619	Ltr re: Answer to 104 Letter w/insurance Policies, Maps, Property Ownership Recs	David W. Long	Jeff Zelikson	4/29/88
0500.20	620	Ltr with Accompanying Maps, Figures re: EPA Request for Information	Richard Blubaugh	Jennifer Decker	6/3/88
0500.20	808	Ltr re: Financial & Insurance Coverage Information w/attachments	Richard E. Blubaugh	Jennifer Decker	5/5/82
0500.20	833	Ltr: Response to 104(e) Letter w/support Documents	Kenneth B. Prindle	EPA	5/6/88
0500.20	862	Ltr re: Request for Information & Real Estate Purchase Contract	Bob J. Hampton	Jennifer Decker	4/19/88
0500.20	863	Response to 104(e) Letter w/exhibit A	Claude W. Bridges	Jennifer Decker	4/19/88
0500.20	865	Response to 104(e) Letter	John W. Johns	Jennifer Decker	4/29/88
0500.20	866	Responses to 104(e) Letter w/annual Report & Transmittal Letter	David E. Noyes	Jennifer Decker	6/22/88
0500.20	867	Response to 104(e) Letter	Lee Quick	Jennifer Decker	4/18/88
0500.20	868	Response to 104(e) Letter	Lowell Baker	Jennifer Decker	4/25/88
0500.20	869	Response to 104(e) Letter	A.J. Eyraud	Jennifer Decker	4/6/88
0500.20	871	Response to 104(e) Letter	David B. Stanton	Jennifer Decker	5/23/88
0500.20	872	Response to 104(e) Letter	David B. Stanton	Jennifer Decker	4/8/88
0500.20	873	Ltr re: Request for Information w/annual Report	T.C. Sager	Jeff Zelikson	5/10/88
0500.20	874	Ltr re: Request for Information	Richard G. Tisch	Jennifer Decker	5/16/88

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0500.20	875	Ltr re: Denial of Connection with Coalinga Asbestos	Joseph P. Cerullo	Jennifer Decker	4/19/88
0500.20	1041	Ltr re: Respopnse to 104(e) Letter	Dorothy G. Bunce/ Reno, NV	Jennifer Decker	7/5/88
0500.25	641	Certified Mail Receipt w/letter and Envelope	Jennifer Decker	Robert Hampton	4/6/88
0500.25	757	Ltr re: Section 104 PRP Responses	Sue Johnson	David Long	8/4/88
0500.25	758	Ltr re: PRP 104(e) Responses	Eve Johnson	Kevin Maroff	8/4/88
0500.25	776	104(e) Letter	Jeff Zelikson	David W. Long	3/18/88
0500.25	777	104(e) Letter	Jeff Zelikson	Floyd Crable	3/18/88
0500.25	778	104(e) Letter	Jeff Zelikson	Wayne Broome	3/18/88
0500.25	779	104(e) Letter	Jeff Zelikson	Ronald Bowmann	3/18/88
0500.25	780	104(e) Letter	Jeff Zelikson	Charles Squire	3/18/88
0500.25	781	104(e) Letter	Jeff Zelikson	Lowell Baker	3/18/88
0500.25	782	104(e) Letter	Jeff Zelikson	Edward Heine	3/18/88
0500.25	783	104(e) Letter	Jeff Zelikson	Claude Bridges	3/18/88
0500.25	784	104(e) Letter	Jeff Zelikson	Richard Johnson	3/18/88
0500.25	785	104(e) Letter	Jeff Zelikson	Al Eyraud	3/18/88
0500.25	786	104(e) Letter	Jeff Zelikson	Steve Kerdoon	5/2/88
0500.25	790	104(e) Letter	Jeff Zelikson	Lee Quick	3/18/88
0500.25	791	104(e) Letter	Jeff Zelikson	Robert Hampton	3/18/88
0500.25	792	104(e) Letter	Jeff Zelikson	John Johns	3/18/88
0500.25	815	104(e) Letter	Jeff Zelikson	Weavers	3/18/88

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0500.25	824	104(e) Letter	Jeff Zelikson	Richard B. Von Wald	3/18/88
0500.25	830	104(e) Letter	Jeff Zelikson	Earl Chambers	3/18/88
0500.25	831	104(e) Letter	Jeff Zelikson	Irving Moore	5/12/88
0500.25	939	Ltr re: Correction to Previous Letter	Jennifer Decker	Robert Hampton	5/24/88
0500.30	759	Signed Order Directing SPTC to Take Action	EPA	D.K. McNear	8/21/87
0500.30	804	Ltr re: SPTC Compliance	David W. Long	EPA	8/27/87
0500.30	806	Comments by SPTC on EPA Order 87-04	David W. Long		9/4/87
0500.30	820	Ltr re: Potential Liability to the Site	Jeff Zelikson	Edward Heine	4/28/88
0500.30	821	Ltr re: Potential Liability to the Site	Jeff Zelikson	Earl Chambers	4/28/88
0500.30	822	Ltr re: Potential Liability to the Site	Jeff Zelikson	Weavers	4/28/88
0500.30	823	Ltr re: Potential Liability to the Site	Jeff Zelikson	Wayne Broome	4/28/88
0500.30	954	Ltr re: Potential Liability	Jeff Zelikson	A. Eyraud	6/13/88
0500.30	955	Ltr re: Potential Liability	Jeff Zelikson	Edward Heine	6/13/88
0500.30	956	Ltr re: Potential Liability	Jeff Zelikson	Charles Squire/ Burbank, CA	6/13/88
0500.30	957	Ltr re: Potential Liability	Jeff Zelikson	Wayne Broome	6/13/88
0500.30	958	Ltr re: Potential Liability	Jeff Zelikson	John Johns	6/13/88
0500.30	959	Ltr re: Potential Liability	Jeff Zelikson	Lowell Baker	6/13/88
0500.30	960	Ltr re: Potential Liability ?	Jeff Zelikson	Irving Moore	6/13/88

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0500.30	961	Ltr re: Potential Liability	Jeff Zelikson	Richard G. Tisch	6/23/88
0500.30	962	Ltr re: Potential Liability	Jeff Zelikson	David Noyes	6/23/88
0500.30	963	Ltr re: Potential Liability	Jeff Zelikson	Mr. Weaver	6/23/88
0500.30	964	Ltr re: Potential Liability	Jeff Zelikson	Irving Moore	6/23/88
0500.30	965	Ltr re: Potential Liability	Jeff Zelikson	E. Heine	6/23/88
0500.30	966	Ltr re: Potential Liability	Jeff Zelikson	Earl Chambers	6/23/88
0500.30	967	Ltr re: Potential Liability	Jeff Zelikson	Wayne Broome	6/23/88
0500.30	968	Ltr re: Potential Liability	Jeff Zelikson	David Noyes	6/13/88
0500.30	969	Ltr re: Potential Liability	Jeff Zelikson	Lee Quick	6/13/88
0500.30	970	Ltr re: Potential Liability	Jeff Zelikson	Robert Hampton	6/13/88
0500.30	971	Ltr re: Potential Liability	Jeff Zelikson	Claude Bridges	6/13/88
0500.30	972	Ltr re: Potential Liability	Jeff Zelikson	Mr. Weavers	6/13/88
0500.30	973	Ltr re: Potential Liability	Jeff Zelikson	Claude Bridges	6/23/88
0500.30	974	Ltr re: Potential Liability	Jeff Zelikson	Earl Chambers	6/13/88
1401.01	559	Ltr re: Removal Action Conducted By SPTC	Jennifer Decker	L.W. Pepple	9/26/88
1401.01	561	Ltr re: Review of Hazardous Substance Containment Report	Jeff Zelikson	L.W. Pepple	9/27/88
1401.01	570	Cover ltr: RI/FS Documents	Jennifer Decker	Gary Carozza	no date
1401.01	571	Cover ltr: RI/FS Document	Jennifer Decker	Martha Hennly	9/16/87
1401.01	572	Cover ltr: RI/FS Documents	Jennifer Decker	Lonnie Wass	3/1/87
1401.01	613	Ltr re: Project Coordinator Position	Jennifer A. Decker	L.W. Pepple	8/31/87
1401.01	614	Revised Comments on Hazardous Substence Containment Plan w/letter	Jennifer A. Decker	L.W. Pepple	9/15/87

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1401.01	615	Ltr re: Sample Community Relations Fact Sheet	Jennifer Decker	L.W. Pepple	9/15/87
1401.01	616	Transmittal Ltr: Sample Documentation Reports	Jennifer Decker	L.W. Pepple	9/17/87
1401.01	617	Ltr re: Submission of EPA's Final Review of Analytical Data	Jennifer Decker	L.W. Pepple	12/8/87
1401.01	658	Cover letter: Airborne Asbestos Sampling Data Report	Jennifer Decker	L.W. Pepple	7/11/88
1401.01	659	Ltr re: Conduct a Biota Survey & Construct an On-site Vault	Robert D. Willey	Jennifer Decker	2/19/88
1401.01	660	Ltr re: Field Trip to Collect Data	Robert D. Willey	Jennifer Decker	5/10/88
1401.01	664	Landfill Design with Fax Cover Page	Leonard O. Yamamoto	ATEC Environmental Consultants	8/16/88
1401.01	690	Cover Letter for RI/FS Documents	Jennifer Decker	Jeanine Jones	9/16/87
1401.01	737	Ltr re: Airborne Asbestos Sampling Data Report	Jeanine Jones	Jennifer A. Decker	1/27/88
1401.01	738	Memo: Risk Assessment Procedures w/letter	Jeanine Jones	Jennifer A. Decker	10/26/87
1401.01	795	Ltr re: Addendum to IT/SPTC Hazardous Substance Containment Plan	Robert D. Willey	EPA	12/8/87
1401.01	796	Meeting Notes: Comments on Field Investigation Report	L.W. Pepple	EPA	9/8/87
1401.01	799	Ltr re: Events on Site w/distribution List	G.L. Murdock	EPA	9/24/87
1401.01	800	Ltr re: Hazardous Substance Containment Plan Addendum II	Robert D. Willey	EPA	1/15/87

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1401.01	802	FAX Cover ltr: Senate Bill 2572	Bob Willey	Jenny Decker	9/11/87
1401.01	807	Cover ltr: Hazardous Substances Containment Plan	David W. Long	EPA	9/4/87
1401.01	897	Chain of Title of SP Right-of-way w/letter	Gary Fairbanks	Jenny Decker	3/4/88
1401.01	982	Ltr re: Planning of Winter Air Sampling Plan	Scott R. Huntsman	Jennifer Decker	2/23/87
1401.01	986	Transmittal Ltr: Expended Air SAP	Michael C. Richards	Nancy Lindsay	8/17/87
1401.01	1039	Inspection Report w/Transmittal Letter	Ruben Moreno	Dave Howell	7/29/88
1401.01	1040	Inspection Report w/transmittal Letter	Ruben Moreno	Thomas Sager	7/29/88
1401.05	703	Emergency Response Action Summary with 2 Photos	Brad Shipley	Jennifer Decker	6/6/88
1401.05	747	Memo: SPTC & Machine Shop Area	Jennifer Decker	Greg Baker	4/25/88
1401.15	618	Hazardous Substance Containment Plan w/letter. Draft	Dennis Robinson	EPA	9/18/87
1401.15	794	Ltr: Comments on Hazardous Substance Containment Plan	Dennis M. Robinson	EPA	9/28/87
1401.15	1005	Draft: Hazardous Substance Removal Plan	ATEC Environmental Consultants		12/88
1401.20	704	Memo re: Re-analysis of Coalinga soil sample	Sean Kennedy	Kent Kitchingman	11/3/87
1401.20	809	Standard Operating Procedures of Asbestos Soil Samples w/attachments	Dennis Robinson	Jennifer Decker	9/11/87
1401.20	976	Quality Assurance Project Plan	Roland A. Sanford		5/8/86

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1401.20	977	Air Monitoring Sampling Plan. Draft	J. David Dean		8/19/85
1401.20	978	Draft Air Sampling & Analysis Plan	Woodward-Clyde		1/15/86
1401.20	979	Ltr re: Equipment for Air Sampling	J. David Dean	Dan Hutton	10/1/85
1401.20	980	Adddendum to Draft Air SAP	Woodward-Clyde		11/20/85
1401.20	981	Draft Equipment List			no date
1401.20	984	Ltr re: Additional Airborne Asbestos Data	David Suder	Jennifer Decker	5/27/87
1401.20	985	Memo: Approval of SAP	Al Vargas	Kent M. Kitchingman	9/21/87
1401.20	987	Expanded Air Sampling & Analysis Project Plan	Woodward-Clyde		8/17/87
1401.20	988	Memo: Addendum to Air Sampling Plan	Al Vargas	Jennifer Decker	7/22/87
1401.20	990	Memo: Revision of Air Monitoring Program	David Suder	Donald Harvey	7/29/86
1401.20	991	Memo: Amended Air SAP w/letter	Scott R. Huntsman	Jennifer Decker	7/15/87
1401.20	996	Outline of Expanded Air Sampling Program w/letter	Scott Huntsman	Jennifer Decker	5/12/87
1401.20	997	Amendments to Air SAP	Scott Huntsman	Jennifer Decker	3/5/87
1401.25	595	Interim Health & Safety Guidelines for EPA Asbestos Inspectors	EPA		5/87
1401.25	705	Site Safety Plan	Geoff Watkin	Jennifer Decker	11/25/87
1401.30	674	Ltr re: Permission for EPA to take Soil Samples	EPA		12/14/88
1401.30	760	Ltr re: Permission to Take Soil Samples	Jennifer Decker	Keith Scrivener/ Coalinga	12/14/88

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DOCUMENT CATEGORY	DOCUMENT NUMBER	DESCRIPTION SUBJECT	FROM	TO	DOCUMENT DATE
1401.30	935	Ltr re: Request to Sample Soil	Jennifer Decker	Keith Scrivner	12/14/88
1401.30	936	Ltr re: Request to Sample Data	Jennifer Decker	Robert Hampton	12/14/88
1401.35	691	Attachments to Oversight of Responsible Party Activities	Jacobs Engineering	EPA	12/87
1401.35	706	Oversight of Responsible Party Activities	Jacobs Engineering	EPA	12/87
1401.35	707	Cover letter: Oversight of Responsible Parties	Sue Johnson	Jennifer Decker	12/21/87
1401.40	999	Meteorological Data Report	Woodward-Clyde Consultants		1/15/88
1401.40	1000	Airborne Asbestos Sampling Data Report	Woodward-Clyde Consultants		6/3/88
1401.45	675	Quality Assurance Report w/letter			9/15/88
1401.50	622	Site Characterization	Mark Unruh		8/88
1401.50	623	Hazardous Substance Containment Report	IT Corporation		1/8/88
1401.50	624	Design Report: Asbestos Waste Management Unit w/transmittal Letter	G. Dale Barnhill	Ruben Moreno	1/89
1401.50	625	Hazardous Substance Containment Report, vol. I	ATEC Environmental Consultants		8/88
1401.50	626	Hazardous Substance Containment Report, vol. II of II	ATEC Env. Consultants		8/88
1401.50	798	Draft Hazardous Substance Containment Plan	SPTC		9/18/87
1401.50	801	Revised Hazardous Substance Containment Plan	SPTC		9/28/87

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DOCUMENT CATEGORY	DOCUMENT NUMBER	DESCRIPTION SUBJECT	FROM	TO	DOCUMENT DATE
1401.50	1042	FS Report: OUFS/Hazardous Substance Remedial Plan	ATEC Environmental Consultants		02/89
1401.52	600	Ltr re: Comments on SPTC Hazardous Substance Containment Plan	Jennifer Decker	L.W. Pepple	2/22/88
1401.55	686	Memo: Public Health Assessment from ATSDR and Community Meeting	Jennifer Decker	Don Hawkins	4/22/87
1401.55	687	Memo: Thank You for the Presentation	Jeff Zelikson	Jeffrey A. Lybarger	5/22/87
1401.55	688	Memo: Update on Comm. Relations and Request for Epidemiological Study	Amy Zimpfer	Jeffrey A Lybarger	9/11/87
1401.55	736	Ltr re: Public Health Issues	James T. Allen	Keith Takata	7/2/87
1401.55	876	Review: Draft Evaluation of Potential Relative Risks Associated with Airborne...	Office of Health Assessment	Don Hawkins	4/30/87
1401.55	877	Review: Draft Evaluation of Potential Relative Risks Associated with Airborne...	Office of Health Assessment	ATSDR	5/4/87
1401.55	878	Ltr re: Epidemiological Study	Gail Louis	Don Hawkins	11/5/87
1401.55	879	Memo: Epidemiological Study Request	Lybarger	ATSDR Region 9	12/11/87
1401.55	880	Preliminary Health Assessment w/letter	ATSDR/Von Allmen	EPA/Clifford	11/3/88
1401.55	885	Health Consultation Memorandum w/attachments	Office of Health Assessment	Don Hawkins	4/22/87
1401.57	621	Endangered Species Survey w/cover Letter	IT Corp		4/88
1401.57	656	Ltr re: Biota Survey	Greg Baker	Gail Kabetich	2/5/88

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1401.57	883	Ltr re: Endangered Species. W/attachments	George Nokes	Robert King	6/8/87
1401.57	884	Ltr re: Endangered Species	Dept. of Fish & Wildlife	EPA	2/29/88
1401.60	568	Ltr: Design and Construction of a Waste Disposal Unit	Robert D. Willey	J. Zelikson	4/12/88
1401.60	569	Ltr: Request Guidance to Design a Disposal Unit	R. Nichols Hazelwood	Lonnie Wass	4/11/88
1401.60	689	Ltr: Detailed Identification of CA ARAR	Phil Bobel	James Allen	4/18/88
1401.60	692	SF Transportation Company	Ruben Moreno	R. Nicholas Hazelwood	5/24/88
1401.60	693	Letter	Jeanine Jones	Jennifer Decker	5/4/88
1401.60	732	Memo re: ARAR's	James T. Allen	Phil Bobel	5/11/88
1401.60	733	Memo re: ARARS	Ruben Moreno	Mark Unruh	8/29/88
1401.60	739	Report: Identification of asbestos with letter	James T. Allen	Keith Takata	8/21/87
7000.01	678	Mailing List w/letter	Tory, Peterson & Sugaser	CA Dept.of Water Resources	6/25/85
7000.01	679	Ltr re: Neighborhood Health Problem	Rose Hess	Gail Louis	7/22/xx
7000.01	680	Ltr re: Citizen Concerns w/EPA Response	Motte	Jennifer Decker	4/5/88
7000.01	681	FOIA Request	Robert Hernando	Gail Louis	8/24/87
7000.01	682	FOIA Request	Norma Chew	Ida Tolliver	2/7/88
7000.01	683	Ltr re: Citizen Concerns About the Site	Vincent Motte	Jennifer Decker	1/8/88
7000.01	896	Ltr re: Lack of Cleanup at the Site	D. Scott Rohlfs	David Long	4/13/88

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DOCUMENT CATEGORY	DOCUMENT NUMBER	DESCRIPTION SUBJECT	FROM	TO	DOCUMENT DATE
7000.01	925	Ltr re: Asbestos & Health	Steve Drew	Henry Leckman/Coalinga	3/21/84
7000.01	926	Transmittal Ltr: RI/FS Work Plan	Scott Huntsman	Myron Levin	9/16/86
7000.01	927	Mailing List and Thank You Notes	Steve Drew	Distribution	3/1/84
7000.01	928	Ltr re: Correspondence w/Santa Fe Pacific Realty Corp.	Michele Dermer	Myron Levin	9/15/86
7000.01	929	Ltr re: Meeting to Develop CRP	Gail Louis	Scrivner	no date
7000.01	930	Ltr re: Transmittal of Reports	Gail Louis	Bob King/Coalinga	11/30/88
7000.01	931	Ltr re: Information Repos. Update	Gail Louis	Kay Anthony	11/30/88
7000.01	932	Ltr re: Information Repos. Update	Gail Louis	Kay Anthony	4/14/88
7000.01	933	Transmittal Ltr: CRP	Gail Louis	"People"	3/18/88
7000.01	934	Ltr re: City Council Meeting	Gail Louis	Vincent Motte	1/20/88
7000.15	676	Revised Draft CRP	WCC		3/88
7000.20	888	Clipping: EPA and Other Studies Asbestos	UPI		1/29/85
7000.20	889	Clipping: County Plans Asbestos Tests	Hollister Free-Lance		11/14/83
7000.20	890	Clipping: Costa Will Visit Arenal	Fresno Bee		5/10/83
7000.20	892	Clipping: Asbestos Plant Opens	Mineral Information Service		12/64
7000.20	893	Clipping: Residents Receive EPA Letter	Coalinga Record		7/22/87
7000.20	894	Clipping: EPA Studying Coalinga Asbestos Situation	Coalinga Record		11/18/87

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DOCUMENT CATEGORY	DOCUMENT NUMBER	DESCRIPTION SUBJECT	FROM	TO	DOCUMENT DATE
7000.20	895	Clipping: Ground Rupture, Coalinga Earthquake of 1983	M.C. Junkin/Hart		8/83
7000.20	899	Clipping: Huron Chief Responds to Hiring Controversy Story	Coalinga Courier		11/17/87
7000.20	900	Clipping: Asbeston Fibers Found in Drinking Water Supplies			no date
7000.20	901	Clipping: Local Meet to Explore Asbestos Fiber Cleanup	Steve Anthony/ Hollister Free-lance		no date
7000.20	902	Clipping: Public Is Excluded from Environmental Agency Meeting Here			no date
7000.20	903	Clipping: Proposal for Clear Creek Area Outlined	Fresno Bee		10/30/85
7000.20	905	Clipping: Asbestos Found in Streams	Russell Clemings/ Fresno Bee		9/7/85
7000.20	907	Clipping: Asbestos in Aqueduct Worries State	Robert Jones/LA Times		2/9/84
7000.20	910	Environmental News Fact Sheet			4/85
7000.20	911	Fact Sheet: Coalinga Asbestos			7/16/85
7000.20	912	Superfund Update: RI/FS	EPA		6/87
7000.20	914	Meeting Packet w/agenda	EPA		1/7/88
7000.20	915	Asbestos Fact Sheet			no date
7000.20	916	Meeting Overhead Slides			no date
7000.20	917	Press Release: City of Coalinga Proposed Plan	EPA	Ann Zawila/KFO Radio	1/30/89
7000.20	918	Superfund Update: Expected Schedule for Removal	EPA		4/88

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DOCUMENT CATEGORY	DOCUMENT NUMBER	DESCRIPTION SUBJECT	FROM	TO	DOCUMENT DATE
7000.20	919	Clipping: Asbestos From Sludge Used in Fertilizers May Be Collecting on Farmland	Amal Kumar Naj/Wall Street Journal		11/9/88
7000.20	920	Clipping: Family Stick With Asbestos-ridden Home	San Jose Mercury News		11/1/88
7000.20	921	Clipping: Asbestos Can Cause Cancer by Transporting DNA	San Jose Mercury News		11/1/88
7000.50	657	Ltr re: Request for Relocation Funds	Susan Robinson	Jennifer Decker	no date
7000.50	662	Ltr re: Relocate Mobile Home	G.L. Murdock	Ruby Goolsby	10/11/88
7000.50	663	Estimate to Remove Mobile Home	L.R. White	Ruby Goolsby	8/15/88
7000.50	684	Ltr re: Ownership Certificate for Ruth Goolsby's Trailer	Gail Lewis	David W. Long	4/12/88
7000.50	685	Ltr re: Moving Ruth Goolsby's Trailer	Gail Lewis	David W. Long	9/23/88
7000.50	741	ROC re: Ruby Goolsby's trailer	US EPA	Carolyn McFarland	3/15/88
7000.50	743	ROC Re: Ruth Goolsby's Trailer	Gail Louis	Susan Robinson	4/6/88
7500.00	677	Ltr: Explain the Delay of Site Cleanup w/attachments	Daniel McGovern	Tony Coelho	9/13/88
8000.25	755	Ltr re: Confidentiality Claim	Jeff Zelikson	Carla J. Irvine	9/28/88

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DATE	AR #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT
01/01/84	AR1	Roger Scholl James Stratta Editors		Coalinga California Earthquake of May 2, 1983 - Reconnaissance Rpt (Document Date 1/84)
08/21/87	AR2	Jenny Decker Environmental Protection Agency, Region IX, S.F.		Memo: Communication Strategy - 106 Order SPTC 87-04
02/22/88	AR3	Sue Johnson Jacobs Engineering Group Inc.		Comments on IT Corp's Hazardous Substance Containment Rpt w/TL to Jenny Decker 3/15/88
05/06/88	AR4	Earl Chambers Marmac Resources Company	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Ltr: Response to 104(e) Ltr - General Overview of Operations, Confirming Extension to Submit Further Information
06/16/88	AR5	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Lee Quick Interstate Towing	ROC: Notice Ltr, Addresses Mixed Up
01/30/89	AR6	Mark Unruh International Technology Corporation	Scott Rohlfs Coalinga City Manager	Ltr: Comments on Design Rpt For Asbestos Waste Management Unit
02/01/89	AR7	Mark Group		Proposed Specifications For Marmac Warehouse Chromite Ore Body Removal and Transportation (Document Date 2/89)
02/01/89	AR8	Environmental Protection Agency, Region IX, S.F.		Fact Sheet - Asbestos Cleanup in Coalinga (Document Date 2/89)
02/10/89	AR9	Sue Johnson Jacobs Engineering Group Inc.	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Ltr: Comments on Asbestos Waste Management Unit w/Attachments

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DATE	AR #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT
02/13/89	AR10	Carla Feldman Shield & Smith, Representing Marmac Resources Company	Dan Meer Environmental Protection Agency, Region IX, S.F.	ROC: Special Notice Ltr, Chromite Ore in Warehouse
02/17/89	AR11	Greg Baker Environmental Protection Agency, Region IX, S.F.	Dan McGovern Environmental Protection Agency, Region IX, S.F.	Memo: Briefing on City of Coalinga OU Superfund ROD
02/22/89	AR12	Environmental Protection Agency, Region IX, S.F.		Transcription of Community Meeting - Asbestos Cleanup Proposed Plan w/Agenda
02/24/89	AR13	Barry Lee Dinkelspiel, Donovan & Reder, Representing Atlas Minerals, Division of Atlas Corporation	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Ltr: Atlas Request for Extensions
02/24/89	AR14	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Carla Feldman Jerry Andes Shield & Smith, Representing Marmac Resources Company	ROC: Marmac Warehouse Clean-up
03/01/89	AR15	Blair King Assistant City Manager of Coalinga	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Ltr: Confirming Extension of Public Review and Comment Period
03/01/89	AR16	Paul Dezurick Graham & James	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Ltr: Concern with the Number of PRPs Participating
03/07/89	AR17	Dan Meer Environmental Protection Agency, Region IX, S.F.	Richard Tisch Union Carbide	ROC: Follow-Up to Notice Ltr

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DATE	AR #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT
03/08/89	AR18	Sue Johnson Jacobs Enginering Group Inc.	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Ltr: Comments on Proposed Specifications For Marmac Warehouse Chromite Removal
03/09/89	AR19	Dan Meer Environmental Protection Agency, Region IX, S.F.	Ruben Moreno California Regional Water Quality Control Board - Central Valley Region	ROC: OUFS - Water Board Will Consider Easing Slope Restriction on Landfill
03/13/89	AR20	Sue Johnson Jacobs Enginering Group Inc.	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Ltr: Comments on Proposed Specifications for Marmac Warehouse Chromite Removal
03/15/89	AR21	Jenny Decker Environmental Protection Agency, Region IX, S.F.		Meeting Agenda, List of Attendees, and Notes Re City Council Concerns with WMU/OUFS
03/16/89	AR22	John Loomis Shield & Smith, Representing Marmac Resources Company	Jenny Decker Jon Wactor Environmental Protection Agency, Region IX, S.F.	Ltr: Comments of Marmac to OUFS/HSRP
03/17/89	AR23	Jenny Decker et al Environmental Protection Agency, Region IX, S.F.	Ruben Moreno Michael Mangold California Regional Water Quality Control Board - Central Valley Region	ROC: Conference Call - WMU Design Specs
03/17/89	AR24	John Zikoponlos Western Technologies	Jenny Decker Environmental Protection Agency, Region IX, S.F.	ROC: Comments on OUFS
03/21/89	AR25	Greg Baker Environmental Protection Agency, Region IX, S.F.	Scott Rohlfs Coalinga City Manager	ROC: Latest on Asbestos Cleanup - City Council Position on Proposed Plan

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DATE	AR #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT
03/23/89	AR26	Keith Scrivner Mayor of Coalinga	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Ltr: Official Response to EPA Cleanup Plan
03/23/89	AR27	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Bob Willey ATEC Environmental Consultants	ROC: Putting WMU Under a Road
03/23/89	AR28	Conard Harper Simpson Thacher & Bartlett, Representing Atlas Minerals, Division of Atlas Corporation	Jon Wactor Environmental Protection Agency, Region IX, S.F.	Ltr: Comments & Questions on Proposed Asbestos Containment Plan in the City of Coalinga
03/24/89	AR29	Robert Thompson Graham & James	Environmental Protection Agency, Region IX, S.F.	Ltr: Comments on OUFS on Behalf of Vinnell Mining
03/24/89	AR30	Phillip Fitzwater Harding Lawson Associates, Representing Vinnell Mining & Minerals Corporation	Environmental Protection Agency, Region IX, S.F.	Ltr: Technical Review Comments on OUFS Hazardous Substance Remedial Plan on Behalf of Vinnell Mining
04/01/89	AR31	Environmental Protection Agency, Region IX, S.F.		Preparation of a US EPA Region 9 Sample Plan for EPA-Lead Superfund Projects (Document date 4/89)
04/07/89	AR32	Michael Mangold California Regional Water Quality Control Board - Central Valley Region	Ruben Moreno California Regional Water Quality Control Board - Central Valley Region	Memo: Review of Design Rpt Asbestos Waste Management Unit w/TL to L W Pepple 4/7/89
04/13/89	AR33	Ed Cargile California Department of Health Sevices	Dan Meer Environmental Protection Agency, Region IX, S.F.	ROC: Proposed Plan Technically Sound, Must Re-evaluate if Location Moved

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DATE	AR #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT
04/19/89	AR34	Dan Meer Environmental Protection Agency, Region IX, S.F.	Bob Willey ATEC Environmental Consultants	ROC: City Will Not Agree to Liner
05/03/89	AR35	Dan Meer Environmental Protection Agency, Region IX, S.F.	Alan Jacobson Coalinga Public Works Department	ROC: Asbestos Rocks Found at Sisk Fountain
05/03/89	AR36	Dan Meer Environmental Protection Agency, Region IX, S.F.	Ed Cargile California Department of Health Sevices	Ltr: Transmittal of Proposed Plan & Request for Comments
05/10/89	AR37	Jerry Clifford Environmental Protection Agency, Region IX, S.F.	Scott Rohlfs Coalinga City Manager	Ltr: General Notice w/Certified Mail Receipt, Domestic Return Receipt and Concurrences
05/19/89	AR38	Dan Meer Environmental Protection Agency, Region IX, S.F.	Scott Rohlfs Coalinga City Manager	ROC: Coalinga's Reaction to General Notice Ltr
05/22/89	AR39	Carla Feldman Shield & Smith, Representing Marmac Resources Company	Dan Meer Environmental Protection Agency, Region IX, S.F.	Ltr: Inquiry into Status of Plan Submitted on Behalf of Marmac for Removal of Chromite
05/25/89	AR40	Laurie Williams Environmental Protection Agency, Region IX, S.F.	John Loomis Shield & Smith, Representing Marmac Resources Company	Ltr: Comments on Marmac's Proposed Cleanup Plan w/Appendix A - Detailed Comments
06/05/89	AR41	Dan Meer Environmental Protection Agency, Region IX, S.F.	Michael Mangold California Regional Water Quality Control Board - Central Valley Region	ROC: STLC and TTLC For Nickel at Coalinga OU
06/08/89	AR42	Dan Meer Environmental Protection Agency, Region IX, S.F.	Ed Cargile California Department of Health Sevices	ROC: DHS Concurrence with Proposed Plan

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DATE	AR #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT
06/09/89	AR43	Dan Meer Environmental Protection Agency, Region IX, S.F.	Leonard Yamamoto International Technology Corporation	ROC: Earthquake Stability of the WMU in Coalinga
06/12/89	AR44	Dan Meer Environmental Protection Agency, Region IX, S.F.	Leonard Yamamoto International Technology Corporation	ROC: Details of WMU Design, Left Message For Yamamoto
06/13/89	AR45	Dan Meer Environmental Protection Agency, Region IX, S.F.	Bill Marshall California Regional Water Quality Control Board	ROC: Grade Requirements on Landfill Caps
06/14/89	AR46	Bob Willey ATEC Environmental Consultants	Dan Meer Environmental Protection Agency, Region IX, S.F.	ROC: Spraying in Coalinga, Changes to OUFS
06/14/89	AR47	Dan Meer Environmental Protection Agency, Region IX, S.F.	Ed Cargile California Department of Health Sevices	ROC: Clean-Up Level For Nickel
06/27/89	AR48	Anthony Landis California Department of Health Sevices	Dan Meer Environmental Protection Agency, Region IX, S.F.	Ltr: Concurrence on Proposed Plan
06/30/89	AR49	Environmental Protection Agency, Washington D.C.		Draft Fact Sheet: Final Rule Banning Manufacture, Processing, Importation & Distribution in Commerce of Most Asbestos Products w/Attachment
07/06/89	AR50	H Josef Herbert Associated Press - Article from San Francisco Examiner		News Clipping: US Bans Almost All Asbestos
07/07/89	AR51	Philip Shabecoff New York Times		News Clipping: EPA to Ban Virtually All Asbestos Products by '96

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DATE	AR #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT
07/07/89	AR52	San Francisco Chronicle		News Clipping: Most Uses of Asbestos to Be Banned by EPA
07/07/89	AR53	Dan Meer Environmental Protection Agency, Region IX, S.F.	Nicholas Walsh US Department of Transportation	ROC: DOT Requirements for Shipping Hazardous Materials
07/17/89	AR54	Dan Meer Environmental Protection Agency, Region IX, S.F.	Charles Reith Jacobs Enginering Group Inc.	ROC: Cap Design for Coalinga WMU
/ /	AR55	Greg Baker Environmental Protection Agency, Region IX, S.F.	Jenny Decker Nancy Woo Environmental Protection Agency, Region IX, S.F.	Memo: Analytical Methods Being Used and Program Consistency
/ /	AR56	Environmental Protection Agency, Region IX, S.F.		Notice of Public Comment Period & Public Meeting on Proposed Cleanup Plan
/ /	AR57	Jenny Decker Environmental Protection Agency, Region IX, S.F.	Russ Clemings Fresno Bee	ROC: City of Coalinga Cleanup - OUFS/Proposed Plan
/ /	AR58	Environmental Protection Agency		List of Guidance Documents (Documents Available at EPA Region 9 Superfund Records Center)
/ /	AR59			Toxicity Profile for Asbestos
/ /	AR60			Bibliography for the Review of Site Risk
/ /	AR61	Dan Meer Environmental Protection Agency, Region IX, S.F.		Review of Site Risk

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DATE	AR #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT
/ /	AR62			Draft RI/FS Rpt South Bay Asbestos Area (Document Available at EPA Region 9 Superfund Records Center)
/ /	AR63			Baseline Risk Assessment for the Atlas Mine Superfund Site

CITY OF COALINGA OPERABLE UNIT RESPONSIVENESS SUMMARY FOR THE OPERABLE UNIT FEASIBILITY STUDY AND PROPOSED PLAN

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY RESPONSE TO COMMENTS ON THE PROPOSED PLAN FOR THE CITY OF COALINGA OPERABLE UNIT OF THE ATLAS MINE AND JOHNS-MANVILLE COALINGA ASBESTOS MILL SUPERFUND SITES

I. INTRODUCTION

The United States Environmental Protection Agency (EPA) held a public comment period from February 9 through March 24, 1989 on EPA's Operable Unit Feasibility Study (OUFS) and Proposed Plan for the asbestos and nickel contamination at the City of Coalinga Operable Unit in Coalinga, California. The purpose of the public comment period was to provide interested parties with the opportunity to comment on the OUFS and Proposed Plan. During the public comment period, a public meeting was held in Coalinga on February 22, 1989 to discuss the results and alternatives presented in the OUFS. Public concerns and comments on Site activities and EPA's preferred clean up plan were formally recorded for the public record. The OUFS was made available on February 9, 1989; the complete Administrative Record was delivered to the Coalinga Public Library on February 23, 1989. The original public comment period was scheduled to close on March 2, 1989. This abbreviated public comment period was designed to expedite the clean up process. However, at the public meeting, members of the community as well as representatives for the Potentially Responsible Parties (PRPs) requested more time to review the OUFS and the Administrative Record. EPA then extended the public comment period to March 24, 1989.

On February 9, 1989, copies of the OUFS were delivered to the Coalinga Public Library, the designated information repository for the Atlas Mine and Johns-Manville Coalinga Asbestos Mill Superfund Sites. By February 9, 1989, fact sheets containing EPA's Proposed Plan had been mailed to all interested parties. Notification of the upcoming public meeting was published in Coalinga and Fresno area newspapers.

Section 113(k)(2)(B)(iv) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) requires that EPA respond to each of the significant comments on EPA's Proposed Plan. This responsiveness summary provides a review and summary of community concerns about the Site and significant public comments on the OUFS and the Proposed Plan. In addition to summarizing significant citizen concerns and questions, the Responsiveness Summary presents EPA's responses to those concerns.

II. OVERVIEW OF THE RECORD OF DECISION AND CRITICAL COMMUNITY CONCERNS

The Agency's selected remedy is the consolidation and burial of asbestos and nickel contaminated material in an on-site Waste Management Unit (WMU). Other alternatives fully analyzed in the OUFS included: i) no action; ii) covering the contaminated waste in-place with one foot of clean soil; iii) removal of contaminated material to an abandoned mine site in the surrounding mountains; and iv) removal of the contaminated material to an approved, off-site landfill.

The community favored removal of the contaminated material from the City and opposed covering the contaminated waste in-place with one foot of clean soil.

This WMU will have an impermeable cap as required by Title 23, Subchapter 15 of the California Administrative Code. The original design included a four percent grade on the WMU. The four percent grade for drainage meant that the crown of the WMU would be six to eight feet above ground level. This was greeted with universal disapproval by the community. The WMU was described at the public meeting as a "visual blight" or an "asphalt dome" which would lower property values in the area, discourage development and negatively impact Coalinga's economy. With these community concerns in mind, EPA asked the California Regional Water Quality Control Board (RWQCB) if it would be possible to reduce the grade of the cap in this case and lower the cap to as close to ground level as is feasible. The RWQCB agreed that the crown for this particular WMU could be lowered. The RWQCB decision was communicated to the Coalinga City Council by EPA representatives at a City Council meeting on April 6, 1989. Mr. Ruben Moreno of the RWQCB was present at this meeting. Another design change made at Coalinga's request was to allow for the possibility of a vegetated surface.

III. SUMMARY OF PUBLIC COMMENTS RECEIVED AND AGENCY RESPONSES

This section includes EPA's response to significant public comments on the OUFS and the Proposed Plan received during the public comment period. The public comments included letters sent to the EPA and comments/questions presented during the February 22, 1989 public meeting. A complete transcript of the public meeting has been entered into the Administrative Record.

EPA has categorized the comments and responses to those comments as follows:

A. Comments made by members of the Coalinga City Council.

B. Comments made by the interested public.

C. Comments made by potentially responsible parties (PRPs).

The comments responded to herein have been summarized or paraphrased as appropriate.

A. COMMENTS BY MEMBERS OF THE COALINGA CITY COUNCIL

A.1 Letter from the Mayor of Coalinga, Mr. Keith Scrivner, dated March 23, 1989. Mr. Scrivner's letter reiterates many comments made by members of the Coalinga City Council at the public meeting, as follows:

A.1.1. Comment: Even though the municipality is the entity on which EPA's decision regarding the Site will have the greatest impact, the City of Coalinga has very little influence on that decision.

A.1.1. Response: Community acceptance is one of nine criteria by which EPA evaluates a remedy. The modification of the proposed plan to accommodate the community's concern regarding the height of the WMU crown and insertion of a flexible requirement for either a vegetative or asphalt cap are examples of the EPA using that criterion in remedy selection.

A.1.2. Comment: The City has not been kept informed of the project status or been involved with design and engineering decisions regarding the WMU. In the last six months, communication between the EPA and the Coalinga community has been inadequate.

A.1.2. Response: In an effort to choose a remedy consistent with community desires and concerns, EPA has communicated and held meetings with representatives of the City of Coalinga frequently throughout the project, specifically since July, 1985. The EPA remedial project manager and community relations coordinator communicated with representatives of Coalinga by letter and fact sheet, and made trips to Coalinga to coordinate the community relations plan with the community and to update the community on the project status. The trips to Coalinga included meetings with City representatives Mr. Bob King and Mr. Bob Semple (both former city planners of Coalinga). These activities occurred between July of 1985 and April of 1989. In April of 1988 the Director of Region IX's Hazardous Waste Management Division, Mr. Jeff Zelikson, attended a City Council meeting to discuss the status of the clean up plan for the City of Coalinga Operable Unit. In November, 1988, representatives of the City of Coalinga, Mr. King (the City Planner) and Scott Rohlfs (the City Manager) met with a representative of ATEC (the consulting firm hired by Southern Pacific Transportation Company (SPTC) to oversee preparation of the WMU design plans) to discuss the design and location of an on-site waste management unit (WMU).

During 1988 several members of the Coaling community and the Coalinga City Council requested that the clean up be completed as quickly as possible. EPA representatives attempted to expedite completion of the proposed plan so that clean up could begin. As noted above, community concerns and needs have been a factor in modification of the design of the WMU.

A.1.3. Comment: Members of the Coalinga City Council believed that the WMU would be located under a road right-of-way. They believe that such a location would be the best possible one, if the WMU must be located within the City limits.

A.1.3. Response: EPA found that there was no technical or environmental basis for requiring the WMU to be located under a road right-of-way. EPA determined that the additional cost for such a WMU was excessive. The ultimate, compatible use for the land above the WMU remains to be determined.

A.1.4. Comment: With hundreds of square miles of open land in the area, why does the waste have to be buried within the City limits?

A.1.4. Response: EPA guidance implicitly recognizes that only a limited number of alternatives for the remediation of each site can be studied in depth. EPA guidance requires identification of one or more alternatives that involve containment with little or no treatment. Guidance For Conducting Remedial Investigations and Feasibility Studies Under CERCLA (October 1988), p. 2-9. Because no feasible treatment exists for asbestos, EPA studied a total of five alternatives in depth, four of which involved containment and not treatment. Two of these alternatives involved taking the waste off-site: (1) disposing of the waste at a permitted landfill and (2) placing the waste in an abandoned mine approximately 20 miles from the Site. At the time that the alternatives to be studied in depth were selected, it was EPA's understanding that the community agreed that an on-site WMU was an acceptable alternative. In response to community input, EPA decided to study an on-site WMU location as close to the edge of the City as feasible. In light of the fact that two off-site containment alternatives were already being studied, EPA did not elect to study any additional off-site alternatives. The bases for rejection of the two off-site alternatives studied are described in the ROD.

A.1.5. Comment: Mayor Scrivner and members of the City Council believe that the WMU design should include a liner, to ensure the maximum protection for the community.

A.1.5. Response: EPA and the California Regional Water Quality Control Board (RWQCB) have determined that a liner is not needed to assure that the WMU effectively protects public health and the environment. See RWQCB Memorandum, dated April 7, 1989, attached as Appendix 2 to the ROD. The cap and drainage system for the unit along with the natural conditions at the Site will provide adequate protection against migration of contaminants. Asbestos is not soluble in water and does not migrate once it has been capped. While the nickel in the material to be buried is soluable, EPA and the RWQCB determined that the presence of this nickel did not justify requiring a liner for the WMU for the following reasons. Coalinga has only approximately seven inches of rainfall per year. There is no detectable vertical hydraulic interconnection between the natural geologic materials underlying the proposed unit and the upper aquifer. A detailed hydrogeologic study of the Site area was performed in August, 1988 by the IT Corporation. This study found that the local groundwater is very deep in this area (greater than 100 feet) and that several impermeable clay layers are present between the surface and the water table in the Site vicinity. In addition, the local ground water in its natural state is not potable. It exceeds the EPA Drinking Water Regulations and the California Department of Health Services (DHS) Drinking Water Standards for sulfate concentrations. The ground water also exceeds the EPA Drinking Water Regulations and the California DHS Recommended Drinking Water Standards for chloride concentrations. As a result this groundwater could not be used for drinking water without substantial treatment.

As an additional safeguard, the Proposed Plan includes monitoring for moisture using neutron probes. Any failure of the cap and/or drainage system will be indicated by moisture detected by the probes and will alert EPA to the necessity of repairing the cap and/or altering the drainage system.

The plan as proposed meets all applicable or relevant and appropriate federal and State requirements (ARARs). Federal regulations require asbestos waste to be capped but do not require asbestos to be placed in a lined vault or a lined landfill

(40 C.F.R. Sections 61.153 and 61.156). Asbestos ore waste that is contaminated with nickel has been classified as a class B mining waste by the State of California. Title 23, Chapter 3, Subchapter 15, Section 2570 (b) of the California Administrative Code states that "[a] regional board may exempt a mining waste pile from the liners and leachate collection and removal systems required in this article if the discharger can clearly demonstrate to the regional board that the leachate will not form in or escape from the waste management unit." Section 2570 (c) provides that regional boards may exempt a mining waste management unit from certain requirements if a comprehensive hydrogeologic investigation demonstrates that "i) there are only very minor amounts of ground water in the area; or ii) the discharge is in compliance with the applicable water quality control plan; and iii) either natural conditions or containment structures will prevent lateral hydraulic interconnection with ... municipal beneficial uses." As explained in the Record of Decision (ROD) and the RWQCB's Memorandum of April 7, 1989, the WMU to be built on the Site has been exempted from these liner and leachate requirements, pursuant to Cal. Admin. Code Tile 23, Chapter 3, Section 2570.

A.1.6. Comment: An elevated crown on the WMU will have a negative economic impact on Coalinga because it will be a "visual blight" which will discourage development in the Site area.

A.1.6. Response: The Record of Decision has modified the Proposed Plan to require that the WMU cap be as close to grade as is feasible. This should minimize any negative visual impact.

A.1.7. Comment: The City of Coalinga questioned whether the City is a Potentially Responsible Party (PRP). As of March 23, 1989, the City had not received any formal notification that it was a PRP.

A.1.7. Response: EPA has notified the City of Coalinga of its status as a PRP pursuant to Section 107(a) of CERCLA in a general notice letter dated May 10, 1989.

A.1.8. Comment The City of Coalinga would like any decision which assigns future liability to ensure that Coalinga does not inherit liability by default if there are no PRPs in existence at some time in the future.

A.1.8. Response: EPA will deal with the issue of liability in the enforcement process. If the City of Coalinga is determined to be a responsible party, it will be jointly and severally liable for all costs associated with the clean up.

A.1.9. Comment: The City is concerned that if land owned by Coalinga is used by SPTC to stockpile waste material during construction of the WMU, the City may have liability if SPTC suddenly quits work in the middle of the project.

A.1.9. Response: The land owned by the City of Coalinga in the proposed stockpile area contains raw asbestos waste piles that contain up to 98 area percent asbestos by PLM. As was noted in the response to comment A.1.8 above, if the City of Coalinga is determined to be a responsible party, it will be jointly and severally liable for all costs associated with the clean up. Therefore, Coalinga's liability will not change if this area is used to stockpile contaminated soil. The ROD does not specify where contaminated material is to be stockpiled. That decision will be part of the remedial design.

A.1.10. Comment: The Mayor and City Council members stated that EPA has attempted to pressure the City into accepting the Proposed Plan by suggesting that making changes in the plan might delay the start of construction. The City representatives indicated that this would penalize the City for making legitimate requests.

A.1.10. Response: EPA has indicated to the City that making changes to the Proposed Plan could cause delays in the start of construction. It was not the Agency's intent, however, to penalize the City in any way, but merely to alert City representatives to the procedures and delays involved in altering the Plan. The WMU design in the Record of Decision has been modified to some extent in accordance with requests by the City. For example, the modifications requested by Coalinga relating to the above ground height of the WMU required a specific waiver by the RWQCB. The process of obtaining this waiver necessarily led to some delay in initiating clean up.

A.1.11. Comment: In response to EPA's comment during the public meeting that the clean up might be delayed by summer heat, the Mayor noted that work could be performed at night and that summer heat should not be an excuse to delay the start of the clean up.

A.1.11. Response: Delays in the issuance of the Record of Decision have made it likely that the work on the remedy will begin in the fall and that summer heat will not be a factor in delaying the clean up. It should be noted, however, that working with respirator protection in very hot weather can be dangerous for on-site workers. In addition, the limited visibility available when using a respirator may make it dangerous to operate heavy equipment at night. If the clean up were to be performed during the summer months, the need for an expedited clean up to protect public health would have to be balanced against the need to protect the health and safety of on-site workers.

A.1.12. Comment: The Mayor suggested that because the OUFS was prepared by a contractor employed by the Southern Pacific Transportation Company (SPTC), that not all of the feasible alternatives were fully explored. The Mayor was concerned that the contractor tried to mitigate the economic impact on SPTC, thereby "casting a considerable cloud on the process."

A.1.12. Response: As required by law, the OUFS was conducted under EPA oversight in accordance with EPA regulations and guidance. Careful oversight by EPA ensured proper preparation of the OUFS. EPA has determined that the alternatives were adequately evaluated in the OUFS.

A.1.13. Comment: The Mayor requested a fifteen (15) day advance notice of any final decisions regarding the Site.

A.1.13. Response: EPA does not provide formal notice of the Record of Decision for public comment. However, EPA has continued and will continue to communicate with City representatives on a regular basis concerning the Site and any decisions concerning the Site remedy.

A.2 COMMENTS BY CITY COUNCIL MEMBERS AT THE PUBLIC MEETING ON FEBRUARY 22, 1989

A.2.1. Comment: City representatives stated that the City of Coalinga will need some technical advice from an environmental attorney or an environmental consultant and that they do not believe that the City should have to pay for that cost.

A.2.1. Response: If Coalinga decides to hire an attorney or a consultant, the City will have to bear that cost. There is no mechanism for EPA to pay that cost. Although EPA does offer technical assistance grants (TAG) of up to $50,000.00 to community groups in areas near Superfund sites, the TAG is not available to municipalities (40 C.F.R. Section 35.4030(a)(4))or potentially responsible parties (40 C.F.R. Section 34.4030(a)(1)), such as the City.

A.2.2. Comment: The public agencies seem to be more concerned with protecting endangered species, protecting non-potable ground water and protecting the health of on-site workers than they are with protecting the health of the people of Coalinga. It doesn't seem right that clean-up should be delayed so that more studies can be done about endangered species when people are breathing asbestos-laden air.

A.2.2. Response: Under its emergency removal authority provided by CERCLA Section 106(a), EPA was able to require spraying of salient on the asbestos piles and restrictions on access, thereby substantially reducing the immediate hazards at the Site.

CERCLA Section 106 authorizes EPA to require such actions quickly to respond to situations posing an imminent and substantial endangerment. Long term remedial response actions, however, must meet applicable federal and State requirements, such as the Endangered Species Act and the Occupational Health and Safety Act, in accordance with CERCLA Section 121(d). Compliance with these applicable or relevant and appropriate laws can require time consuming studies and planning.

A.2.3. Comment: Is a 21 day public comment period legal?

A.2.3. Response: CERCLA Section 117 requires a reasonable opportunity for public comment on the proposed plan. EPA initially decided to use a 21 day public comment period in order to expedite the cleanup process. In response to public concern that this time period was inadequate, the comment period was extended for an additional 22 days, for a total public comment period of 43 days.

A.2.4. Comment: What, if any, land use restrictions will be imposed on properties adjacent to the WMU?

A.2.4. Response: EPA will require all land use restrictions necessary to protect the integrity of the cap and drainage system of the WMU, in order to protect public health and the environment. Land use restrictions will apply to the area of the cap.

A.2.5. Comment: The public comment period did not allow adequate time to examine documents. The OUFS was not available in the repository for review when public comment period opened.

A.2.5. Response: As mentioned previously, the public comment period was extended from March 2, 1989 to March 24, 1989 to allow additional time to examine the OUFS, the Proposed Plan and the Administrative Record. Several copies of the OUFS were mailed by Federal Express to the Coalinga Public Library on February 8, 1989. To the best of EPA's knowledge, the OUFS was available in the Coalinga Public Library on February 9, 1989 as scheduled. As noted above, however, the full Administrative Record was not available at the Coalinga Public Library until February 23, 1989.

A.2.6. Comment: If the City Council categorically rejects the option of locating the WMU within the City limits, what are the other options? The City of Coalinga should not be responsible for the clean up.

A.2.6. Response: Community acceptance is one of nine criteria on which EPA evaluates alternative remedies under CERCLA. As discussed above in Response A.1.4 the OUFS for the City of Coalinga Operable Unit contained detailed evaluations of five alternative remedies. Four of these alternatives did not involve disposal in an on-site WMU. As was noted in Response A.1.4, the

ROD describes the bases for EPA's determination that an on-site WMU is the best remedy under the circumstances. If it is determined that the City of Coalinga is a responsible party, the City will be jointly and severally liable for the costs associated with the selected remedy.

A.2.7. Comment: What is the earthquake rating of the vault? What did the geotechnical studies show about the location of Holocene faults in relation to the proposed vault location?

A.2.7. Response: The WMU is designed to be stable in the event of the maximum credible earthquake expected in the Coalinga area. The earthquake experienced in the Coalinga area in May of 1983 had a maximum peak ground acceleration of .54 g. The WMU is designed to be stable at a ground acceleration greater than or equal to .7 g. The Holocene faults which were active during the 1983 earthquake were not expressed at the surface in the City of Coalinga. No holocene faults have been documented at or near the WMU Site. A geologist registered by the State of California will be present at the Site during excavation of the WMU area to confirm that no faults exist in this area.

A.2.8. Comment: EPA standards for asbestos may change in the future. If less than or equal to 1 area percent asbestos by PLM is no longer considered clean in the future, what will happen to the Site?

A.2.8. Response: If new studies of the effects of asbestos revealed that the health based performance level relied upon in the ROD was not protective of public health or the environment, EPA would reevaluate the situation and take appropriate action.

A.2.9. Comment: Is the WMU classified as a Class 1 hazardous waste landfill? Who owns the land where the WMU is going to be located? Are SPTC and SPLC the same company?

A.2.9. Response: The WMU is not classified as a Class 1 hazardous waste landfill and the waste at the Site is not a Class 1 waste. SPTC owns the property where the WMU will be located. SPTC and SPLC were previously part of the same company; they are currently separate corporate entities.

A.2.10. Comment: The closing of Polk Street and the transport of contaminated material to the WMU area must be done using strict asbestos handling protocol.

A.2.10. Response: EPA will oversee every phase of WMU construction and transport of contaminated material. State and federal regulations regarding transport of asbestos contaminated material will be complied with when material is transported to the stockpile area. This includes wetting down the material, covering the trucks, and ensuring that no spillage occurs. The route that the trucks take while transporting the contaminated material is a detail of the plan that will be resolved during the design phase.

A.2.11. Comment: City Council members want to ensure that drainage off of the WMU is carefully controlled to avoid flooding problems.

A.2.11. Response: EPA will insure that the design of the WMU includes adequate drainage.

A.2.12. Comment: Can asbestos be compacted to a consistency so that a parking structure can be built on the vault?

A.2.12. Response: Because much of the asbestos is mixed in with soil, there should be no problem with compacting the material to reduce its volume by 95%. This should allow a parking structure to be built on the vault if the City would like to do so.

A.2.13. Comment: Contaminated material is going to be excavated from certain areas in the Site and then replaced with fill material. Will this fill material be clean or will it be 1% contaminated? What are the requirements for compaction of the fill material?

A.2.13. Response: The fill material will have less than or equal to 1 area percent asbestos, which is the detection limit by the EPA-approved testing method (i.e., PLM); this is the selected clean up level for the Site. Compaction requirements have not been ascertained; those requirements will be a part of the detailed design plan.

B. COMMENTS BY THE INTERESTED PUBLIC AT THE PUBLIC MEETING

B.1. Comment: If removal and transport costs are low, why is the cost of shipping the material to the Kettleman landfill so much more than the construction of a WMU?

B.1. Response: The major increased cost associated with the Kettleman option is the charge (per ton of material) to put material into the landfill. The current cost to dispose of asbestos at Kettleman is $200/ton. There are estimated to be approximately 20,000 tons of contaminated material on the Site. Hence it would cost approximately $4 million to deposit the contaminated material at Kettleman. Transportation costs would also be higher to take the contaminated material to Kettleman than to place it in an on-site WMU.

B.2. Comment: Compare the amount of asbestos waste present to the amount of nickel waste present.

B.2. Response: Asbestos and nickel are measured by different methods using different units on different scales. Asbestos is measured using a variety of different units depending on the medium being sampled (i.e. air, soil, water, insulation material, etc.). Nickel is measured in milligrams (mg) per liter or mg. per kilogram. In addition, while sampling performed at the Site has found a range of levels of each contaminant, there has been no measurement of the total volume of either contaminant at the Site. As a result, a direct comparison of the amount of asbestos and nickel waste present is not possible.

B.3. Comment: Who pays for the EPA time on this Site and the cost of operation and maintenance?

B.3. Response: As noted above, EPA will deal with the issue of liability in the enforcement process. Those PRPs who are determined to be liable for the clean up will be responsible for all costs associated with remediation of the Site, including EPA's costs and operation and maintenance costs.

B.4. Comment: The New Idria Serpentine Mass, one of the largest asbestos deposits in the world, is located near Coalinga in the mountains. Asbestos from this formation washes down throughout the whole area, so isn't there greater than one percent asbestos all over the place in Coalinga?

B.4. Response: Naturally occurring asbestos is present in the Coalinga area. EPA is not able to address any hazard which may be posed by this naturally occurring material and is limited to cleaning up asbestos which is present at the Site as a result of human activities. EPA has determined that the large volume of asbestos that is present at the Site was deposited there as a result of the milling, mining and transport of asbestos. The Operable Unit Site was a major shipping depot for asbestos. Asbestos ore and other mining materials were brought in from the mines to Coalinga and then shipped out by train and truck. EPA has determined that the high concentrations of asbestos at the Site are the result of improper disposal and handling of asbestos containing material during these activities. These facts bring the substances at the Site within the purview of CERCLA and a clean up of the asbestos at the Site to health based levels is therefore appropriate.

B.5. Comment: Is the chromite ore in the Marmac warehouse addressed in the clean up plan? Is the chromite ore considered a mining waste? The chromite ore should be considered a resource and not a waste.

B.5. Response: The Proposed Plan provides that the chromite ore in the Marmac warehouse will be disposed of in the WMU unless a plan for its recycling or reprocessing is approved by September

15, 1989 and the material is removed for recycling or reprocessing by October 16, 1989. Analysis of the chromite ore indicate that the chromium content is too low for it to be considered a hazardous waste by the State of California. However, because the chromite ore is contaminated with asbestos at levels exceeding one area percent by PLM, it is a hazardous substance under CERCLA.

B.6. Comment: One community member suggested that the waste be put in the pit at the Granite Rock Company quarry.

B.6. Response: The Granite Rock Company has no connection with the asbestos waste in the City of Coalinga. It is unlikely that a company with no liability for the Site would allow contaminated material to be placed on its land. Further, it would violate State and federal laws to dispose of the material in such a fashion. For example, this action would violate Cal. Admin. Code Title. 23, Chapter 3, Subchapter 15, which requires Class B mining wastes to be disposed of in a WMU with an impermeable cap.

C. COMMENTS MADE BY PRPs IN LETTERS TO EPA AND IN COMMENTS DURING THE PUBLIC MEETING

C.1. Comment: The public comment period did not allow the PRPs adequate time to examine documents, develop a response and/or make a good faith offer.

C.1. Response: Eighteen PRPs were notified of their potential liability in letters from EPA sent in the spring of 1988; the City of Coalinga was notified of its status as a PRP in a letter dated May 10, 1989. PRPs were also provided with notice of the public comment period on the OUFS and Proposed Plan which began on February 9, 1989, and of the extension of that comment period until March 24, 1989.

Eighteen PRPs were notified in a letter dated February 22, 1989 that they would have until March 28 to make a good faith offer to perform the remedial action. While this period is substantially shorter than the sixty days provided for under the special notice procedures of CERCLA Section 122(a), the use of those procedures is discretionary. In this case, EPA chose not to employ those procedures because of the immediate nature of the hazard at the Site. While preliminary steps have been taken to address the hazard, EPA determined that the clean up of this Site should be expedited in light of the significant remaining risk to the public health and the environment.

C.2. Comment: What are the EPA costs to date on the City of Coalinga Operable Unit project?

C.2. Response: EPA costs as of February 2, 1989, were in excess of $89,000.00. This amount does not include costs incurred by SPTC to conduct the feasibility study and draft the Proposed Plan.

C.3. Comment: Marmac Resources, Inc. questioned the professional credibility of IT Corporation (the contractor for SPTC which performed the feasibility study), inferring that because IT stands to benefit from high enough readings to require cleanup, and since its measurements are open to some 'subjective adjustments', self interest may have been a factor in its reports.

C.3. Response: All sampling and analyses have been conducted under strict EPA oversight using Agency procedures, including quality control/quality assurance and chain of custody procedures.

C.4. Comment: The OUFS does not specifically address the potential risk to public health and the environment from short fiber chrysotile asbestos and nickel contaminated soil. No risk assessment was performed and therefore the OUFS cannot be considered complete. Without a complete OUFS, adequate evaluation of alternatives cannot be done.

C.4. Response: The ROD and other documents in the Administrative Record analyze the risk at the Site and the ability of the different remedial alternatives to address this risk. EPA's guidance explicitly recognizes that the level of effort appropriate to performing a risk assessment at a given site depends on many factors, including the concentration and identity of substances, the number of exposure pathways, the likelihood that the "no action" alternative will be chosen (if it is likely that the no action alternative will be chosen, a more thorough risk assessment is necessary). Draft RI/FS Guidance, March 1988, at 3-36 to 3-37. Chrysotile asbestos contamination of soils and the presence of asbestos ore waste and nickel-contaminated waste at the Site have been confirmed by extensive sampling. Asbestos is one of the few known human carcinogens. One pathway is of most concern: inhalation. The uncontained asbestos-contaminated materials are located very close to a population center; without remediation the receptor population, which includes young children, may be subjected to daily exposure. The OUFS and the supporting Administrative Record clearly establish that an imminent and substantial risk to the public health is present at the City of Coalinga Operable Unit. Given all of these factors, it was extremely unlikely that the no action alternative would be chosen. Considering all relevant factors, the analysis of Site risk contained in the Administrative Record meets both the terms and the spirit of EPA's requirements.

Based on extensive experience at numerous other asbestos-contaminated Sites, EPA determined that accurately quantifying baseline risks and the reduction in risk at asbestos-contaminated Sites due to various alternatives is beyond the present capabilities of environmental science. A risk assessment has been conducted for the Atlas and Johns-Manville Superfund Sites to fulfill NCP requirements, which is in part applicable to this operable unit and will be added to the Administrative Record. However, EPA deemed it inadvisable to unnecessarily delay the release of the OUFS and Proposed Plan while awaiting the release of this risk assessment, as it is peripheral to our understanding of the situation in the City of Coalinga and the best way to address it.

C.5. Comment: The evidence linking ingestion of asbestos with adverse human health effects is weak.

C.5. Response: EPA is most concerned about the risk to human health from inhalation of asbestos at this Site; these risks have been widely documented. EPA has also concluded that there is evidence that ingestion of asbestos may also pose a significant risk to human health. Results of studies investigating the link between ingestion of asbestos and cancer have been less conclusive. However, in a National Toxicology Program (1984) bioassay, male rats ingesting intermediate range chrysotile fibers had a significant increase in benign, epithelial neoplasms in the large intestine. EPA considers evidence that a substance causes benign tumors as an indication that the substance is a possible carcinogen.

C.6. Comment: Marmac Resources commented that cleanup of the warehouse area will not solve the airborne asbestos problem in Coalinga.

C.6. Response: EPA has determined that although there is naturally occurring asbestos in the Coalinga area, that the asbestos in the warehouse area of the Site was deposited there as a result of human activity. Therefore a clean up of this hazard is appropriate, as explained in Response B.4. above.

C.7. Comment: Marmac Resources commented that the asbestos in the warehouse area was brought there by natural environmental forces or by other PRPs.

C.7. Response: See Response B.4. above regarding human transport of the asbestos found at the Site. The issue of transport of asbestos to the Site by other PRPs as opposed to Marmac Resources will be dealt with in the enforcement process and is irrelevant to EPA's selection of the remedy for the Site.

C.8. Comment: Marmac Resources commented that the chromite ore in the warehouse area of the Site presents no hazard, or imminent and substantial endangerment to human beings.

C.8. Response: Testing of the chromite ore revealed that chromium content was sufficiently low that the presence of that metal did not pose a hazard. However, sampling also demonstrated that the chromite ore was contaminated with asbestos. It is the asbestos content which is the basis for EPA's determination that the chromite ore must be handled as a hazardous substance.

C.9. Comment: Marmac Resources commented that the chromite ore waste in the warehouse is a strategic mineral which could properly be classified as an exempt non-hazardous mining waste and should be excluded from the Proposed Plan.

C.9. Response: Three companies were contacted by ATEC (consultants to SPTC) regarding disposal of the chromite ore, during the Hazardous Substances Containment Study. Analyses of samples from the chromite ore pile indicated that metal concentrations were too low to be of any commercial use. None of the companies contacted could use the chromite ore. However, the ROD does allow for the possibility of recycling or reprocessing of this material. See also Response C.8., above.

C.11. Comment: Vinnell Mining and Minerals Corporation (VMMC) stated that the sealing of asbestos contaminated material to temporarily suppress dust on the Site should be considered as a remedial action alternative.

C.11. Response: The spraying of biodegradable sealant on the asbestos-contaminated material was an interim action designed to reduce airborne asbestos during the detailed Site investigation. It was not considered as a possible remedial action alternative for the following reasons. Selection of this remedy would violate ARARs and, therefore, would not comply with CERCLA Section 121. The National Contingency Plan also contains a strong bias towards long-term solutions. Spraying with a sealant which has to be reapplied on an annual basis does not meet this criteria. Second, spraying with sealant to contain the asbestos would also require significant land use restrictions on large areas throughout the Site. The community has indicated that it does not favor a remedy that would result in such land use restrictions.

C.12. Comment: VMMC commented that without air monitoring in Coalinga after the spraying of the sealant, it is not possible to judge whether the spraying has had the desired effect of reducing airborne asbestos in the Coalinga railway corridor. If the sealant spraying has not reduced airborne asbestos, then it follows that the source of asbestos in Coalinga must be other nearby or regional sources.

C.12. Response: As mentioned previously, sealant spraying was a temporary action to stabilize the asbestos contaminated areas while evaluating feasible remedial alternatives. Sealant spraying was never intended to be the final remedial action; therefore there was no need to conduct post-spraying air monitoring. Even if such air monitoring had been conducted, it would not yield conclusive data due to the many environmental variables involved. The ROD includes extensive confirmation soil sampling to ensure that the clean up meets the specified goals.

C.13. Comment: Representatives for VMMC believe that the Asbestos Hazard Emergency Response Act (AHERA) has been misapplied. The OUFS applies the one percent AHERA criterion to all samples as opposed to bulk samples.

C.13. Response: In the ROD, EPA determined that less than or equal to 1 percent by PLM is an appropriate, health-based cleanup level for this Site regardless of the AHERA standard. EPA relies on the AHERA ARAR only for the use of PLM as an appropriate method of measuring asbestos area percent. The OUFS was incorrect in this regard. The PLM method, as contained in AHERA, is the only EPA-approved method for measuring asbestos levels in bulk samples, i.e. bulk samples of friable insulation materials, as distinguished from air or water samples.

C.14. Comment: VMMC commented that details of the regional air modeling should be included in the OUFS or be made available as separate technical memoranda.

C.14. Response: The regional air modeling is part of the ongoing Remedial Investigation at the Atlas Mine and Johns-Manville Coalinga Mill Superfund Sites. Details of this modeling will be presented in the RI for those Sites. EPA did not rely on the details of the regional air monitoring in selecting a remedy for the City of Coalinga Site.

C.15. Comment: VMMC commented that the screening of feasible alternatives in the OUFS was incomplete.

C.15. Response: EPA has determined that the OUFS presents a thorough evaluation of the feasible alternatives. The alternatives and the factors used to evaluate them are described in the ROD. See also Response A.1.4.

C.16. Comment: VMMC commented that detailed design work on the WMU has been proceeding before public comments on the OUFS were received.

C.16. Response: The ROD is a conceptual document that describes a remedial alternative in general terms. A PRP remains free to begin design work at their own expense and risk at any point. As of the date of ROD signature, no agreement has been entered into between EPA and any PRP which authorizes work on the remedial design.

C.17. Comment: Atlas Minerals Corporation commented that it was interested in participating in the process of cleaning up asbestos and nickel contaminated material in Coalinga.

C.17. Response: EPA will deal with the issue of PRP participation in the clean up process in the enforcement process. Participation is not relevant to selection of remedy.

C.18. Comment: Atlas Minerals asked how many PRPs had entered into Consent Agreements concerning this Site and which ones were involved in preparation of the OUFS.

C.18. Response: To date no parties have entered into any agreements with with EPA regarding the Site. EPA has sent letters to eighteen PRPs inviting them to present good faith offers to and negotiate settlements with EPA. Negotiations are ongoing at this time. SPTC conducted a Site Characterization and prepared the OUFS for the Site with EPA oversight, pursuant to an Administrative Order issued to them by EPA.

C.19. Atlas Mineral Division of Atlas Corporation raised the following questions in a 24 page letter, from Konrad W. Harper of Simpson Thacher to Jon K. Wactor of EPA, dated March 23, 1989:

C.19.a. Comment: Do the data, within analytical and sampling error, demonstrate that the 210 West Glenn Street property currently is contaminated with asbestos generated by historical warehouse activities.

C.19.a. Response: The Administrative Record contains data which demonstrates that the West Glenn Street property is contaminated with asbestos in excess of 1 area % and up to 80 area % by PLM. The history of the Site indicates that the asbestos contamination at the Site is a result of human activity, including activity at the historic Atlas warehouse and distribution center.

C.19.b. Comment: Is the Glenn Street property posing an unacceptable asbestos health risk?

C.19.b. Response: Yes. The high levels of asbestos present on the property post an unacceptable health risk, especially through the inhalation pathway. The ROD and other documents in the Administrative Record elaborate on the nature of this risk.

C.19.c. Comment: Is remediation of the Glenn Street property necessary?

C.19.c. Response: Yes. Remediation of the contamination at the property is necessary to protect human health and the environment.

C.19.d. Comment: Is remediation of the Glenn Street property cost-effective?

C.19.d. Response: CERCLA Section 121(a) requires that the response action be cost-effective. The cost-effectiveness of the remedy selected for this Site is documented in the ROD and the Administrative Record.

C.19.e. Comment: Could the asbestos detected at the Site be asbestos wind-blown from other locations or asbestos resulting from activities at the Site since 1966?

C.19.e. Response: Evidence collected by EPA and contained in the Administrative Record indicates that it is extremely unlikely that the asbestos at the Site could have been blown there from other locations. Samples were taken at the Site with concentrations of asbestos as high as 98 area % by PLM. On the Glenn Street property concentrations as high as 80 area % by PLM were found. Activities subsequent to 1966 may have contributed to some of the contamination in some parts of the Site.

C.19.f. Comment: Why is the WMU designed above grade?

C.19.f. Response: The WMU was originally designed to be above grade in order to maximize drainage. The ROD requires the WMU to be constructed to be as close to grade as is feasible.

C.19.g. Comment: Is the WMU containment structure, as designed, necessary?

C.19.g. Response: Yes. Some of the design criteria are required by ARARs. The technical bases for other design criteria can be found in the Administrative Record. See correspondence with the Regional Water Quality Control Board throughout the Administrative Record.

C.19.h. Comment: Why is the WMU containment structure not located in existing rights of way

C.19.h. Response: See Response A.1.3.

C.19.i. Comment: Why did EPA not discuss the preferred alternative prior to the public meeting?

C.19.i. Response: EPA did discuss the preferred alternative (i.e. the proposed plan) in the fact sheet that it distributed 13 days prior to the public meeting to all parties who had expressed an interest in the Site. Furthermore, this alternative was discussed in detail with many of the members of the Coalinga City Counsel, at previous City Counsel meetings, and in meetings with all known PRPs, including representatives of Atlas, prior to the start of the public comment period.

C.19.j. Comment: Why is the public comment period extremely limited?

C.19.j. Response: The original public comment period was limited to expedite final clean up of a substantial endangerment to public health. EPA extended the public comment period to 43 days, which is longer than that provided at many other sites. The 43 day period provided a reasonable opportunity for public comment.

C.19.k. Comment: What is meant by the short and long term effectiveness of the preferred alternative as discussed?

C.19.k. Response: The meaning of short and long term effectiveness of a remedy is discussed in A Guide to Developing Superfund Records of Decision (July 1988). "Short term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved." P.3 "Long term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met." P.3.

C.19.l. Comment: What are the current regional and site-specific human and environmental risks, and can they be quantified?

C.19.l. Response: The risks at the Site and the problems with quantifying them are accurately are discussed in the ROD, including Appendix 1, and the Administrative Record. See also, Response C.4.

C.19.m. Comment: After implementing the preferred alternative plan, what reduction in human and environmental risks would be realized?

C.19.m. Response: The risks at the Site and the problems with accurately quantifying any reduction in risk as a result of the remedy are discussed in the ROD and Administrative Record. The risk associated with potential exposure to extremely rich asbestos ore waste will be significantly reduced. See also Response C.4.

C.19.n. Comment: What environmental and human benefits will be achieved with the implementation of the preferred alternative?

C.19.n. Response: The preferred alternative will contain the hazardous substances under an impermeable cap. Human health and the environment will be protected from further contact with the contaminants.

C.19.o. Comment: After the preferred alternative is implemented, what quantifiable and effective reduction in toxicity risk or mobility of contaminants will be achieved?

C.19.o. Response: See Responses C.19.m and C.19.n, above, regarding the difficulty of quantifying risks at the Site. The remedy will not use treatment to reduce toxicity or mobility but the selected remedy does effectively reduce the mobility of the contaminants through containment. The risk of exposure to hazardous substances is also effectively reduced by the selected remedy.

C.19.p. Comment: What are the itemized costs associated with implementing each of the evaluated alternatives?

C.19.p. Response: The estimated costs for the evaluated alternatives are as follows:

a) no action:	negligible
b) Removal of waste to an abandoned mine site:	$9 million
c) Soil cover in place:	$600,000 to $800,000
d) Disposal at an off-site landfill:	$5.5 million
e) Disposal at an on-site landfill:	$2.5 million

The high cost of removal of the waste to an abandoned mine site is due to the cost of building roads to the mine site. The high cost of disposal at an off-site landfill is a result of the fees for disposal at such landfills. The cost for disposal at an on-site landfill is for construction, including labor, and operation and maintenance. See also, Responses C.19.ccc and C.19.s.

C.19.r. Comment: What are the detailed plans for implementing the preferred alternative?

C.19.r. Response: A conceptual design is included in Design Report, Asbestos Waste Management Unit, SPTC, Administrative Record Doc. # 624. Final Design will be approved by EPA in the future context of this case.

C.19.s. Comment: What criteria were used to estimate the costs to implement the preferred remediation plan?

C.19.s. Response: Specific criteria included the costs of meeting ARARs, local labor rates, materials for construction of the WMU, labor rates for workers in level C protection, water rates, and costs of water trucks and enclosed trucks. Guidance For Conducting Remedial Investigations and Feasibility Studies Under CERCLA (October, 1988), Evaluating Cover Systems for Solid and

Hazardous Wastes (September 1982), SW-867 (EPA-D-03), and Design, Construction and Maintenance of Cover Systems for Hazardous Wastes: An Engineering Guidance Document, (EPA 600-2-87-039).

C.19.t. Comment: What are the itemized costs for conducting the technical studies by EPA and SPTCo?

C.19.t. Response: The itemization of these costs is not relevant to EPA's selection of the remedy at this Site. The concern of this PRP with respect to specific past costs will be dealt with in the enforcement context, as is appropriate.

C.19.u. Comment: Atlas states that the literature tends to support the conclusions that the health risks of short fiber asbestos are less than those of long fiber asbestos and that such risks are less for chrysotile asbestos than for other forms of asbestos.

C.19.u. Response: EPA considers short fiber asbestos and long fiber asbestos to be equally carcinogenic; ample evidence in the Administrative Record supports this view. EPA disagrees that the literature supports an opposite view. The recent Asbestos Ban Rule specifically supports EPA's position in this regard. See Administrative Record Document # 1105.

C.19.v. Comment: What are the regional asbestos health issues?

C.19.v. Response: The ROD and documents in the Administrative Record explain the relationship between the regional health issues and the Site. The Remedial Investigation for the Atlas Mine Site further addresses these issues; a complete understanding of all region-wide issues is not necessary to select a remedy to address the immediate health risk at this Operable Unit.

C.19.w. Comment: What are the asbestos regional and local background concentration levels?

C.19.w. Response: Background concentration levels vary depending on proximity to the New Idria Serpentine Mass, meteorological conditions, human dust generation activities, and other factors. Regional air monitoring indicated elevated levels of asbestos in ambient air samples collected in Coalinga compared to background levels collected in Hanford, California. The detailed data on these levels are contained in the Administrative Record.

C.19.x. Comment: What health risks are associated with short-fiber asbestos? Does the chrysotile asbestos found in the Coalinga region induce an unacceptable health risk? Is the chrysotile asbestos carcinogenic?

C.19.x. Response: Asbestos is a known human carcinogen. Although there is substantial disagreement in the scientific community over which forms of asbestos are the most hazardous and carcinogenic, EPA has determined, based on the best available evidence, that the asbestos at the Site presents an imminent and substantial endangerment to human health and the environment that requires remediation. See also, Response C.19.u.

C.19.y. Comment: Are short asbestos fibers less of a health risk than long asbestos fibers, and if so, what health risk has been introduced by historical warehouse activities in the City of Coalinga?

C.19.y. Response: See Responses C.19.u and C.19.x. for the answer to the first part of this question. The apportionment of responsibility among Potentially Responsible Parties is not directly relevant to EPA's selection of the remedy. EPA will address these enforcement related concerns in the enforcement context. See also, Response C.19.jjj.

C.19.z. Comment: What are the historical and current asbestos health risks in the City of Coalinga?

C.19.z. Response: See Responses C.19.y, C.19.x, C.19.u, and C.4, as well as Appendix 1 to the ROD.

C.19.aa. Comment: What exposure and health risks associated with the asbestos are found within the study area?

C.19.aa. Response: The main pathway of exposure to asbestos at the Site is through inhalation, although ingestion also represents some risk. To the best of EPA's knowledge, epidemiological surveys have not been performed in the Coalinga area.

C.19.bb. Comment: Does the preferred remediation plan mitigate asbestos exposure as well as unacceptable health risks?

C.19.cc. Response: The proposed plan mitigates unacceptable health risks by mitigating exposure to asbestos.

C.19.dd. Comment: Can a cost-effective remediation plan be implemented, and can the plan be justified?

C.19.dd. Response: Yes. The proposed plan is fully implementable from a technical standpoint. As determined in the ROD, the plan meets all the requirements of CERCLA and the National Contingency Plan, including cost-effectiveness.

C.19.ee. Comment: What is the background nickel concentration?

C.19.ee. Response: Background concentrations of nickel in Hanford, California were measured at 70 ppm, using the TTLC Wet Extraction Test. Western soils have been documented to contain 16 ppm nickel. Background levels vary depending on proximity to the New Idria Serpentine Mass, meteorological conditions, human dust generation activities, and other factors.

C.19.ff. Comment: Is nickel an environmental health risk in the City of Coalinga?

C.19.ff. Response: Yes. The major environmental health risk from nickel in the City of Coalinga is from inhalation of nickel-laden dust. See also, Toxological Profile for Nickel, Admin. Record Doc. # 668.

C.19.gg. Comment: Is the asbestos contaminated with nickel or is nickel naturally occurring?

C.19.gg. Response: Data suggest that the nickel is a by-product of the asbestos milling process. Chrysotile and nickel both occur naturally in certain rock formations but their occurrence at the Site is not natural. Nickel is a "contaminant" within the meaning of CERCLA Section 101(33).

C.19.hh. Comment: Is nickel elevated because of oil drilling and production activities in and adjacent to the City of Coalinga? Are the nickel concentrations related to Coalinga's petroleum industry?

C.19.hh. Response: No, it is extremely unlikely that the nickel detected in the asbestos contaminated material is a result of any activity related to oil production in Coalinga. If there were a connection, the nickel would be randomly distributed at the Site and not concentrated only where the asbestos contaminated material is present.

C.19.ii. Comment: Is nickel mobile in the existing environment?

C.19.ii. Response: Unless the impounded waste is contacted with a low pH liquid, soluble nickel is not expected to be mobile in the existing environment. However, nickel-laden dust or soil at the Site can be entrained into the atmosphere if soil or dust is disturbed. Therefore, nickel is mobile in this media at the Site.

C.19.jj. Comment: Is nickel complexed with minerals (e.g., nickel chloride, nickel sulfate) other than asbestos?

C.19.jj. Response: The Wet Extraction Test in this context does not indicate the complexing relationship of the nickel but simply the concentration of the extractable nickel present.

C.19.kk. Comment: Does the nickel concentration pose an unacceptable human health and environmental risk?

C.19.kk. Response: Yes.

C.19.ll. Comment: If the preferred plan is implemented, will health risks be cost-effectively reduced?

C.19.ll. Response: Yes. CERCLA Section 121 requires that the selected response action be cost-effective and protective of public health and the environment. In the ROD, the Regional Administrator determined, based on the Administrative Record, that the selected alternative is a cost-effective means to protect public health and the environment.

C.19.mm. Comment: What are the health risk exposures/pathways related to nickel concentrations?

C.19.mm. Response: At the Site, exposure via ingestion and inhalation of nickel dust are the exposure pathways of concern.

C.19.nn. Comment: Are high nickel releases related to chromite ore warehouse activities?

C.19.nn. Response: EPA is aware of no evidence that this is the case.

C.19.oo. Comment: Was a chemical pathway data analysis performed?

C.19.oo. Response: See Responses A.1.5, A.1.6, C.2, and C.4.

C.19.pp. Comment: Was a contaminant/leachate water balance analysis performed which demonstrated percolation through the impermeable asbestos? If so, did the results show an unacceptable human health or environmental risk?

C.19.pp. Response: No, a contaminant/leachate water balance analysis was not performed. However, a detailed hydrologic study was done to assess vertical conductivity between the surface and the upper aquifer. This included data on precipitation/evaporation rates, permeability of individual subsurface layers and characteristics of fluid movement in soils. This study concluded that even without an impermeable cap, the potential for movement of fluid from the impounded waste to the upper aquifer was remote. Asbestos is not impermeable. Asbestos is not soluble in water and is not expected to move out of the WMU into the subsurface. The concern of the EPA and the RWQCB with respect to subsurface contamination is the possibility of movement of soluble nickel in percolated water. The impermeable cap will prevent water from entering the impounded waste, making the formation of nickel containing leachate unlikely. Further, EPA and RWQCB are confident that the WMU is adequately isolated from the upper aquifer by several impermeable clay layers in the subsurface.

C.19.qq. Comment: What toxicological evaluations have been performed, and what were the conclusions?

C.19.qq. Response: See Response C.4. and the nickel and asbestos toxicity profiles in the Administrative Record.

C.19.rr. Comment: What design components of the WMU are attributable to the disposal of nickel, and what are the associated costs?

C.19.rr. Response: The low permeability of the cap and the neutron probes to detect moisture within the the impounded waste are design components attributable to the presence of nickel. The exact costs attributable to these design components cannot be determined until final design is approved by EPA.

C.19.ss. Comment: Atlas comments that a waiver from ARARs should have been considered, and that more data should have been collected to justify such a waiver.

C.19.ss. Response: EPA determined that a waiver from ARARs was not appropriate for this Site. Atlas does not indicate why a waiver would be appropriate or even what waiver might be appropriate, so EPA is constrained from replying in any more detail.

C.19.tt. Comment: Why are asbestos and nickel relationships not adequately discussed?

C.19.tt. Response: The relationship between asbestos and nickel is adequately discussed in the OUFS for purposes of remedy selection. A positive correlation between the asbestos contamination and the presence of nickel at the Site is demonstrated by the data contained and discussed in the Hazardous Substance Containment Report which is included in the Administrative Record.

C.19.uu. Comment: In addition to background concentrations, what are the other sources for nickel levels found in the soils?

C.19.uu. Response: EPA has determined that nickel levels in excess of background at the Site are a by-product of the asbestos milling process.

C.19.vv. Comment: Will nickel have an impact on drinking water supplies?

C.19.vv. Response: The City of Coalinga gets its drinking water from the California Aqueduct; nickel is not expected to impact drinking water supplies. See Response A.1.5. However, the nickel could have a negative impact on other beneficial uses of the aquifer, including irrigation. See correspondence with the Regional Water Quality Control Board throughout the Administrative Record.

C.19.ww. Comment: Will nickel have an adverse impact on the water quality in the uppermost aquifer?

C.19.ww. Response: See Responses A.1.5. and C.19.vv.

C.19.xx. Comment: What are the cost-effective attributes associated with the design of the preferred mitigation plan?

C.19.xx. Response: The OUFS and the ROD both describe the cost-effectiveness of the proposed plan.

C.19.yy. Comment: What chemical pathways of nickel have been demonstrated that will result in quantifiable contamination to the environment and a quantifiable health risk?

C.19.yy. Response: It is unclear what is meant by chemical pathways of nickel in this context. EPA assumed that the commenter meant to refer to exposure pathways. The exposure pathways of concern are inhalation of nickel-laden dust and soils, ingestion of nickel-laden dust and soils, and ingestion of nickel-laden ground water. The proposed plan will mitigate exposure through all of these potential exposure pathways.

C.19.zz. Comment: What is the chemical fate of nickel in the existing environment?

C.19.zz. Response: It is unclear what is meant by chemical fate of nickel in this context. The concerns regarding nickel at this Site include leaching of soluble nickel into the ground water and entrainment of nickel contaminated dust and soil into the air.

C.19.aaa. Comment: The Administrative Record does not show technical comments and acceptance of the RI/FS and OUFS by the State of California.

C.19.aaa. Response: The State has concurred in the selected remedy. See Admin. Record Doc. # 1094.

C.19.bbb. Comment: Atlas comments that the City of Coalinga has not approved or accepted the preferred containment plan, and alleges that "[t]he City of Coalinga, as represented by its citizenry and public officials at the February 22, 1989 public meeting, disapproved the EPA administrative and technical processes used to prepare the preferred containment plan."

C.19.bbb. Response: Community acceptance of the remedy is not a threshold or primary balancing criteria, rather it is a modifying criteria. See A Guide to Developing Superfund records of Decision (July 1988) page 3. EPA's consideration of community concerns is described in the ROD. The procedures followed by EPA in selecting the remedy for this Site were in full compliance with CERCLA Section 117's requirements regarding public participation. EPA also consulted with the City throughout the process of studying the Site and selecting a remedy, beyond the minimum requirements set forth in Section 117.

C.19.ccc. Comment: Atlas alleges that the following information is "missing" from the RI/FS Administrative Record:

1) Detailed description of the data which define contaminant sources and their pathways of migration, as well as potential sources of contaminants.

2) A risk assessment which determines the contaminants of concern, their toxicity, potential exposure levels affecting potential receptors, mechanisms of exposure, and potential effects.

3) Detailed costs for all evaluated remediation alternatives.

4) Detailed listing of all PRPs and the justification for including each of them.

5) Detailed itemization of all existing landowners and the records regarding historical ownership.

6) Detailed itemization of all existing tenants and the records regarding historical tenancy.

7) Detailed itemization of study costs.

C.19.ccc. Response: For a response to the issues raised by Subparts 1 and 2 of this Comment, see Response C.4. With respect to Subpart 3 of this Comment, the total cost of each alternative is what is considered in determining cost-effectiveness, rather than a detailed cost breakdown. Subparts 4 through 7 of this Comment are not appropriately raised in this context because they do not relate to the basis for selection of the remedy at this Site. The Administrative Record was prepared pursuant to CERCLA Section 113(k)(2) and contains the information "on which the President [or the President's delegatee, EPA] will base the selection of removal actions and on which judicial review of removal actions will be based." CERCLA Section 113(k)(2)(A). The opportunity to comment, provided pursuant to CERCLA Section 113(k)(2)(B)(ii) is an "opportunity to comment and provide information regarding the plan." The questions raised by this portion of the Comment are all enforcement related and are more appropriately dealt with in the enforcement context, not in comments on the proposed plan.

C.19.ddd. Comment: The only copies of the Administrative Record readily available to Atlas were located in the EPA Region IX library and in the public library for the City of Coalinga. Atlas did not receive a copy until March 1989.

C.19.ddd. Response: Pursuant to Section 113(k)(1) of CERCLA, EPA is required to keep a copy of the Administrative Record at or near the Site. EPA not only complied with this statutory requirement, but also made a copy of the Administrative Record available at the EPA Regional Office. Furthermore, EPA staff supplied copies of many of the principle documents, as well as much of the relevant information, to Atlas' representatives in meetings prior to the start of the public comment period.

C.19.eee. Comment: Atlas alleges that EPA "refused access" to technical data used by EPA, and refers to a Freedom of Information Act ("FOIA") they "filed . . . with EPA on July 3, 1988." Atlas also states that EPA failed to provide it with a copy of the transcript of the February 22, 1989 public meeting.

C.19.eee. Response: Atlas granted EPA extensions on the time to comply with the FOIA request. Also, Atlas has specific rights under FOIA, including appeal rights, to protect any concerns that it had or has about Region 9's response to FOIA requests or other requests for documents. Furthermore, EPA staff supplied copies of many of the principle documents, as well as much of the relevant information, to Atlas' representatives in meetings prior to the start of the public comment period. Without further elaboration by Atlas regarding its concerns about access to data, EPA cannot give a more specific response to this comment. EPA complied with CERCLA Section 117's requirements regarding participation by the public, including Potentially Responsible Parties. See Responses C.19.ddd., and C.19.j.

C.19.fff. Comment: Atlas alleges that "[t]he technical data used to generate EPA's . . . RI/FS have been collected over the last ten years." (page two of Atlas' letter); Atlas comments that it was not given an opportunity to participate in EPA's data collection activities.

C.19.fff. Response: It is unclear what document Atlas is referring to in this comment. The RI/FS for the Atlas Mine Site is still ongoing. The data for the Operable Unit Feasibility Study for this Site was generated over the last two years. Not until the public meeting of March 22, 1989 did Atlas offer to perform or take part in response actions at the Site. Atlas was notified of its status as a Potentially Responsible Party in March of 1988. Prior to the PRP search activities, the whereabouts of Atlas were unknown to EPA.

C.19.ggg. Comment: Atlas alleges that it was not given an opportunity to participate in the design of a cost-effective remediation plan.

C.19.ggg. Response: Atlas was notified of its status as a PRP in March of 1988. At a minimum, Atlas has had an opportunity to participate in the selection of a cost-effective remedy through the submission of its 24 page comment letter; this opportunity was provided pursuant to Section 113(k)(2)(B) of CERCLA.

C.19.hhh. Comment: Atlas alleges that in the 1980s EPA conducted an investigation of the asbestos issues in the City of Coalinga and determined that asbestos must be removed.

C.19.hhh. Response: This comment misstates the facts. Regional air monitoring in the Coalinga area in 1986 and 1987 indicated elevated levels of airborne asbestos in the City of Coalinga. Based on this information, EPA initiated an investigation in the City of Coalinga to determine if localized sources were responsible for these elevated ambient air levels. During the course of this investigation, several hot spots of asbestos contamination were identified in the area of the Site. EPA did not decide to do a complete remedy at the Site until this investigation was completed.

C.19.iii. Comment: Atlas alleges that asbestos concentrations are less than 1 area % in most samples for the Glenn Street portion of the Site, and that only one quality assurance sample showed an asbestos concentration as high as 2 % TEM. Atlas further alleged that the initial results showed less that 1 area % concentration within the immediate area of the Atlas warehouse.

C.19.iii. Response: The detailed Site investigation indicated that the Glenn Street portion of the Site is contaminated with asbestos at levels exceeding two area percent and up to 80 area percent by PLM. These data are included in the Hazardous Substance Containment Report which is in the Administrative Record. The levels of asbestos contamination found in the initial Site investigation were high enough to require further study, which indicated dangerously high levels of asbestos present. The Glenn Street Property is the portion of the Site closest to residential areas.

C.19.jjj. Comment: Beginning in the middle of page 21 of their letter and continuing up to the concluding paragraph on page 24, Atlas includes a discussion and questions which are entirely enforcement related.

C.19.jjj. Response: These comments do not address the bases for EPA's remedy selection.As explained in Response C.19.ccc above, the purpose of this public comment period is to provide an opportunity for interested members of the public to comment and provide information regarding the proposed plan. See CERCLA Section 113(k)(2)(B)(ii). This is an inappropriate context for a PRP to seek information regarding enforcement-related topics.

REVIEW OF ASBESTOS ANALYTICAL METHODS

I. Asbestos Analytical Techniques

There are three commonly accepted analytical methods used to measure asbestos. They are:

1) Phase Contrast Microscopy ("PCM"): An optical technique useful in examining minute particles.

2) Polarized Light Microscopy ("PLM"): An optical technique that uses polarized light to identify minerals.

3) Transmission Electron Microscopy ("TEM"): A technique using excitation of electrons to achieve extremely high resolution of asbestos fibers too small to be resolved using optical methods.

A brief description, including the advantages and disadvantages of each technique, is presented below.

A. Phase Contrast Microscopy

Phase contrast microscopy ("PCM") is a method of optical microscopy that is commonly used to analyze air samples collected in the work place (e.g. in enclosed spaces). PCM translates differences in the phase of light transmitted or reflected by the object into differences of intensity in the image. The method is better suited to analysis of work place air than ambient air because in the work place one encounters a relatively large concentration of large bundles of asbestos fibers. Most of the available medical studies of asbestos diseases have measured asbestos using PCM. This is because PCM was the only technique available when most of the occupational studies were done.

The PCM technique has two major limitations concerning its use in the ambient environment. The method cannot detect fibers with diameters of less than 0.2 micrometers. Many fibers in the environment are much smaller than this. Also, PCM does not distinguish between asbestos fibers and other types of fibers. Therefore, in the environment, the PCM fiber count may be completely unrelated to the asbestos fiber content. For these reasons, it is widely accepted that the PCM method is totally unsuitable for measurement of asbestos fibers in ambient atmospheres.

The major advantages of PCM are: i) it is relatively inexpensive and; ii) it is easy to use PCM data to calculate health-based risk in an occupational environment using the models established in the older studies.

B. Polarized Light Microscopy

Polarized Light Microscopy ("PLM") is the EPA-approved method of analysis for bulk insulation samples. The PLM technique is relatively quick (1/2 hour/sample) and provides a reliable method to: (1) identify all asbestos types, (2) distinguish between asbestos and other fibrous and non-fibrous minerals and (3) identify most non-asbestos components of samples. The resolution capacity of PLM is 200x to 400x magnification. Another advantage of PLM is that it can be performed for a relatively low cost.

There are two ways to do PLM analysis, the point counting method and the field comparison method. The point counting method uses a superimposed grid (gravicule) with 100 points. The operator counts the points where asbestos is present. The method (point count) involves the preparation of eight slides, each of which can be viewed at 100 possible points, to establish the presence or absence of asbestos at 50 points on each slide. The result is recorded and reported as area percent based on the number of positive points. The following format is used for determination:

Area percent = a/n (100)
where:

a = number of points with asbestos fibers present
n = number of non-empty points counted.

The field comparison method, also called "visual estimation" or the 2-minute method with the stereobinocular light microscope, is used to quantify a large sample (e.g., 1 ounce) using the microscope at 30-40x. The operator estimates the homogeneity of the mixture and estimates the percentage of each individual fibrous component.

The disadvantages associated with PLM include:

- o Asbestos content determination is usually done by visual estimate (field comparison) or point counting, and is thus qualitative or at best, semi-quantitive; concentration is expressed as the ratio of asbestos to non-asbestos particles or percent by area.
- o Small fiber identification is difficult because certain optical properties (birefringence and the angle of extinction) are hard to determine in small fibers.
- o The smallest fibers that can be observed are approximately 0.34 micron in diameter; fibers this small, though observable, cannot usually be identified for mineral type.
- o Highly skilled analysts are required, particularly in view of the subjective nature of the determinations.
- o The quantitative limit of detection is 1 area percent.

Using PLM to identify asbestos in soils can be difficult because soils are subjected to erosion and weathering; asbestos bundles become separated and broken into smaller, possibly sub-optical, sizes much more quickly than fiber bundles in relatively undisturbed insulating materials. Asbestos fibers may also be dispersed by wind and by seasonal flooding. Therefore, a sizeable fraction of the asbestos fibers in soil could be below optical resolution. On the other hand, PLM is the only method of measuring asbestos with an EPA approved methodology for sampling and analysis. Therefore, it is the one analytical method that can be adequately controlled in a quality assurance/quality control plan. Also it is significantly less expensive than TEM analysis.

C. Transmission Electron Microscopy

Transmission electron microscopy ("TEM") is the most powerful analytical method available for measuring asbestos. TEM can be used for air, water, or soil analysis. It is the preferred instrumental technique for measuring asbestos in ambient atmosphere since it incorporates the most powerful combinations of identification methods. TEM analysis uses electron microscopy, at magnifications of 10,000 to 50,000 times, to detect asbestos to the single fibril level. Fibers as small as 0.2 nanometers in diameters can be identified. Besides the transmission electron microscope, which allows the operator to locate very small fibers, this technique can also utilize two mineral identification tools. These are Selected Area Electron Diffraction ("SAED") and Energy Dispersive X-ray Analyzer ("EDXA"). Using these tools, the operator can identify the mineral type from a single point on the specimen.

The disadvantages associated with TEM include the following:

- No widely accepted TEM method is available for the analysis of asbestos in soils, making it difficult to correlate interlaboratory data. Sample preparation methods are not standard among workers, making the comparison of results between sites or laboratories very difficult or meaningless.

- Analysis requires a minimum of 6 to 8 hours over 2 to 3 days. Highly skilled analysts are required and large differences in results can occur due to operator variance. TEM analysis is extremely expensive, over 20 times the per sample cost of optical methods.

- Sample size is very small. Therefore, data must be extrapolated to a great extent to adequately characterize a large site.

- Typically, total fibers are counted. Sample preparation (i.e., grinding) destroys the fiber size distribution.

TEM sample preparation alters the soil matrix. This is significant because the sample is dispersed into very fine particles before it is put onto a filter for analysis. Since asbestos occurs in clusters and bundles as well as fibers, the sample preparation process (in the case of soil) can destroy the structure of those forms and produce a very large number of individual fibers of small size. Although total fibers are counted as part of the TEM analysis, these results must be converted to weight percent, using data on length, width, and density. This conversion to mass is necessary due to the sample preparation grinding process, which artificially increases the fiber count. How the TEM weight percent compares with air emissions and risk tables has not been standardized by government or industry. Therefore, interpretation of soil data results relative to air samples and/or risk charts is very difficult, at best.

II. Problems with Using Asbestos Data in Quantifying Risk

Although the role of asbestos as a cause of cancer is clear, the ways in which fibers cause disease are not well understood, and this has complicated efforts to measure asbestos successfully. Asbestos researchers have not agreed upon which attributes of asbestos are important to measure to assess risk, including size and shape of individual fibers, number of fibers, total mass of fibers, inclusion of asbestos bundles, clusters, and matrix debris in the fiber count, and asbestos mineralogical type. For example, most researchers think that longer, thinner asbestos fibers (those longer than 5 microns in length with an aspect ratio greater than 3 to 1) are more carcinogenic, i.e., The "Stanton Hypothesis". However, other researchers question this approach, suggesting that both long and short fibers may be biologically active. In addition to fiber dimension, surface chemistry of the asbestos fibers may play a role in causing disease. Further, there is disagreement whether mineral type is a factor in disease causation. Some would argue that chrysotile asbestos may partially dissolve in weakly acidic environments, facilitating fiber clearance from the lung. However, EPA's view is that all asbestos mineral types are equally carcinogenic.

To compound the problem, analysis of ambient samples for asbestos is much more difficult than occupational or work place samples, because the concentration of asbestos in the environment is much lower. Asbestos fibers found in ambient air are typically too short and thin to be detected by conventional microscopes, and may be agglomerated with other particulate matter so that they are masked or hidden. Further, although EPA has attempted to standardize asbestos analytical techniques, differences in sample handling, preparation, instrument capabilities, operator proficiency, and counting procedures make it extremely difficult to compare results from different laboratories. In short, accurate measurement of asbestos is impeded by many factors, greatly complicating any estimates of environmental risk. For this reason clean up levels have been established using the best available analytical methods for which an approved methodology exists. The following discussion summarizes the rationale behind choosing the one area percent by PLM clean up level.

III. Clean Up Goals for the City of Coalinga Operable Unit

Problems with asbestos analytical techniques make establishing health-based clean up levels very difficult. As mentioned above, the clean up level of one area percent by PLM has been chosen because it is the best available analytical technique for which there is an EPA approved protocol. This is further evidenced by the fact that EPA chose to utilize PLM as an analytical method under the Asbestos Hazard Emergency Response Act ("AHERA"). EPA has chosen the one area percent clean up level for the City of Coalinga Operable Unit because one area percent is the generally accepted detection limit for asbestos in soil using PLM. One area percent by PLM has also been used in the past as an action level in emergency response situations. This level will provide protection to public health and the environment.

Memorandum

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD • CENTRAL VALLEY REGION

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TO: Ruben Moreno
Senior Engineer

FROM: Michael R. Mangold
Staff Engineer

DATE: 7 April 1989

SIGNATURE: Michael R. Mangold

SUBJECT: DESIGN REPORT, ASBESTOS WASTE MANAGEMENT UNIT, SOUTHERN PACIFIC TRANSPORTATION COMPANY, COALINGA, FRESNO COUNTY

I have reviewed the subject design report as prepared by IT Corporation for Southern Pacific Transportation Company (SPTC). SPTC proposes to construct a waste management unit (WMU) for disposal of Group B mining waste.

Background

SPTC is working with the Environmental Protection Agency (EPA) under a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) order for a mining waste site (approximately 107 acres in area) located in the City of Coalinga. Cleanup of the site will include excavation and removal of an estimated 20,000 ft^3 of asbestos ore and contaminated soils. This waste has been classified as Group B mining waste and will be disposed into an appropriate waste management unit as delineated in Section 2572, Title 23 of the California Code of Regulations (Subchapter 15).

International Technology (IT) Corporation prepared a report characterizing local hydrology and geology for SPTC to be used as the basis for design of the proposed asbestos WMU. The report's objective was to provide information necessary to:

1. Determine whether the wastes should be disposed of as Group A or B mining wastes.
2. Provide a basis for design of the disposal facility.
3. Determine the level of monitoring necessary to satisfy Subchapter 15 requirements.

Following staff's review of the report, the following determinations were made.

1. The mining waste is classified as Group B waste.
2. Clay liner and leachate collection system may be exempted for the proposed unit.

APPENDIX 2

3. Groundwater monitoring could be minimized in favor of a vadose zone monitoring network that incorporates neutron probe technology to detect potential discharges from the WMU.

4. Excavation of the WMU should be monitored to assure that the WMU remains in compliance with Subchapter 15 siting requirements.

Based upon the site characterization and staff's review of applicable or relevant and appropriate requirements (ARARs), the following items were requested.

1. A preconstruction report including construction details and quality assurance and quality control procedures for the excavation, filling, and capping of the proposed WMU.

2. A water quality monitoring plan for the proposed vadose zone monitoring network including locations and details of monitoring points and a plan for implementation of groundwater monitoring.

To this end, SPTC has submitted this report.

Design

The WMU will have a design capacity of 25,000 ft^3. Top surface area of the WMU will be 272 ft. by 222 ft., with a bottom elevation of 671.5 ft. or 20 ft. below the existing ground surface. Side slopes will be constructed at a 3:1 ratio. A 20-foot wide embankment will be constructed around the unit to raise the top level of the WMU to adjacent topography following removal of the contaminated soil in that location. The embankment will have a 2 percent slope to promote runoff away from the WMU.

Closure Plan

Final cover of the landfill will consist of the following (from bottom to top):

*A two-foot foundation layer consisting of waste materials or clean fill compacted to 95 percent of maximum dry density. This layer will be graded at 4 percent slope.

*A 1/4-inch thick bentonite mat (Claymax, or an equivalent) placed on top of the foundation layer. The report indicates that this mat is an engineered alternative to the prescriptive standard of a one-foot layer of compacted clay having a permeability of $1x10^{-6}$ cm/s or less.

*A minimum of one foot of soil cover placed on top of the mat. This layer will be compacted to obtain 95% of maximum dry density.

*A final layer consisting of 4 inches of concrete asphalt compacted to 92% of the average density of the Maximum Theoretical Specific Gravity. The report states that grading will be at 4 percent to facilitate runoff from the WMU; however, from recent discussions with the EPA, a smaller slope may be used.

Indications are, the area above the WMU might be used as a parking lot or as a long-term storage facility.

As mentioned previously, the report indicates the bentonite mat is an engineered alternative to the prescriptive standard of a layer of compacted clay. Section 2510 (b) of Subchapter 15 states that, "unless otherwise specified, alternatives to construction or prescriptive standards contained in this subchapter may be considered. Alternatives shall only be approved where the discharger demonstrate that:

1. The construction or prescriptive standard is not feasible as provided in subsection (c) of this section.

2. There is a specific engineering alternative that

   (A) is consistent with the performance goal addressed by the particular construction or prescriptive standard and

   (B) affords equivalent protection against water quality impairment."

Subsection (c) states that, "To establish that compliance with prescriptive standards in this subchapter is not feasible for the purposes of subsection (b) of this section, the discharger shall demonstrate that compliance with a prescriptive standard:

1. Is unreasonably and unnecessarily burdensome and will cost substantially more than alternatives which meet the criteria in subsection (b) of this section; or
2. Is impractical and will not promote attainment of applicable performance standards.

Feasibility Issue

The report indicates that a compacted clay layer is not practical for the following reasons:

1. Investigations performed in the area showed that a source of clay is available at 20 feet below existing grade. However, costs for obtaining the clay would be exorbitant.

2. Cost of obtaining the borrow clay from other sources are also extremely expensive due to high transportation costs.

3. Quality of borrow clay from outside sources is questionable and may not be obtainable within the time frame of the project.

Engineering Alternative Issue

The consultant believes that the bentonite mat (Claymax) is consistent with the performance goals addressed by the prescriptive clay liner and provides equivalent protection against water quality impairment. The following reasoning was provided to support this position.

*Permeability tests performed on Claymax by Geoservices Inc., (an independent lab) have demonstrated a permeability of 2×10^{-10} cm/s.

*Based on equivalent seepage velocity, Claymax of 1/4-inch thickness is equal to an infinite thickness of compacted clay liner with a permeability of 1×10^{-6} cm/s.

*Based on equivalent breakthrough time, the 1/4-inch Claymax is equal to at least 2 feet of compacted clay with a permeability of 1×10^{-6} cm/s.

*The Claymax is more flexible than a compacted clay liner and can handle large deformation without causing cracking.

The report further states that Claymax is manufactured under controlled conditions and is readily available to the site. Furthermore, handling and installation of Claymax is easier and faster than compacted clay.

Information on comparison studies (performed by Geoservices, Inc.) between Claymax and a compacted clay liner are included in Appendix F and G of the design report.

Vadose Zone Monitoring

Vadose zone monitoring will exist beneath the site to provide an early detection system for possible migrating contaminants emanating from the landfill. Neutron probes were selected to detect any changes in moisture content directly beneath the site.

Vadose zone monitoring will consist of pulling the probes through two access tubes installed beneath the site. The locations and spacing of the access tubes are illustrated in Drawing No.2 of the design report. The tubes will be spaced 85 feet apart and will be placed 2 feet beneath the bottom of the WMU.

Soils samples will be extracted every 5 feet along the access tube trenches and will be laboratory tested to determine native moisture contents prior to actual installation of the tubes. The locations for the soil samples will coincide with intervals to be used for monitoring with the neutron probes. Prior to any discharge of waste into the WMU, background data will be generated by monitoring with the neutron probe each week for four weeks. After this data is obtained, the monitoring frequency will be decreased to quarterly for a period of one year. If no significant changes in the moisture content are observed after a period of one year, the monitoring frequency will be again decreased to semiannually.

The design report indicates that results from each monitoring event will be compared with results from previous vadose zone monitoring and background data. The report states that in the event that a significant change in moisture content is observed, an assessment of the situation will be initiated and the Regional Water Quality Control Board (RWQCB) will be notified. The report further states that in the event that moisture content increases above 5 percent